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公 告 本

(以上各欄由本局填註)

發明 專利 說明 書

一、發明名稱	中 文	射出成形之彈性鞋底元件，含有該鞋底之鞋及製造該鞋底之方法
	英 文	INJECTION MOLDED ELASTOMERIC SOLE COMPONENT, SHOE INCLUDING SAME AND METHOD OF MAKING SAME
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四、中文發明摘要（發明之名稱： 射出成形之彈性鞋底元件，含有該鞋底之鞋及製造該鞋底之方法）

一具有松樹油香味的彈性射出成型足墊具有一被一在足墊底部之間隙環繞的緩衝跟部，該間隙係被一具有大致與該緩衝部之底面在同一平面上之底緣的脊所包圍。將該墊之底面與一鞋底之內面隔開的底胎紋將在該墊與該鞋底之間的滑動減至最少。在該墊中之孔可供空氣由一在該墊下方之間隙通過到達一具有該墊之鞋之穿鞋者足部。一模製在該墊上表面之織物層係被一在該上表面中之槽所包圍，該槽係當由一具有一用以將該織物層保持在原位之凹洞模製時形成，該槽係被一具有一該織物層在其中的窗的織物塗層所圍繞。一類似之織物層係與一結合在一由加州法製成之鞋之襯墊上的射出成型鞋底模模製在一起，該襯墊具有一環繞該織物層之窗戶。

英文發明摘要（發明之名稱：

附註：本案已向 美 國（地區）申請專利、申請日期：1994,1,11 案號：08/180,167

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本發明係有關彈性鞋底元件，具有這種鞋底元件之鞋以及有關製造這些鞋底元件以及與這些鞋底元件之鞋的方法，特別是有關具有在射出成型過程中與其結合之織物襯裡的射出成型鞋底元件，以及有關於具有改良緩衝能力之足墊。

具有足墊之鞋的鞋底元件一般係被當做嵌入物與鞋一起販賣而且當做可由使用者加入鞋中之分開附件單元販賣，被當做一分開之附件單元販賣的最常見的一種足墊具有數層類似於製造紙之材料的織物材料。這種足墊之壽命相當有限而且該等足墊，如果有的話，只能對使用者提供很少的支持。雖然已經發展出由彈性材料製成之足墊，但通常相當昂貴，可能是因為還沒有用高產量之技術來製造它們。

被當做嵌入物與鞋一起販賣的足墊，特別是運動鞋，通常是與結構體模製在一起，這種嵌入物通常只會放在相當高價的運動鞋中，可能因為涉及製造該等嵌入物之費用。

在製造包括足墊之鞋底元件時在該等鞋底元件之上表面上加上一裝飾式樣或一商標或其他標記是很常見的，過去，在該元件製造完成後將標記放在該鞋底元件上是常有的，該等標記通常是利用一轉換方法或將一織物標籤縫在該鞋底元件上來設置。前述兩種方法在該鞋底元件完成後都需要一額外的步驟，因此增加了該物件之成本，此外，通常該等標記無法精確地放在該鞋底元件上，不論是在該

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鞋底元件或該鞋上，這部份都無法使其被當做一個高品質商品來使用。

因此，本發明的目的是提供一鞋的新且改良鞋底元件，該元件係由相當便宜之射出成型法製造，以及其製造方法。

本發明之另一目的是提供一新且改良之鞋底元件，在該元件製成時，其上附著有一織物標籤或其他織物元件，以及其製造方法。

本發明之再一目的是提供一新且改良之鞋底元件，在射出成型該鞋底元件時具有一附著其上的織物元件。

本發明之又一目的是提供一具有一織物元件之鞋底元件，雖然使用便宜，高產量之技術，但是該織物元件一直會正確地固定在該鞋底元件上，以及其製造方法。

本發明另外的目的是提供一具有優異之緩衝能力之相當便宜的彈性射出成型足墊。

另一個本發明的目的是提供一具有一便宜的緩衝足墊的新且改良鞋件，其中該鞋件具有供容納該足墊以增進緩衝性的特殊結構。

本發明最後的目的是提供一具有一射出成型鞋底的新且改良鞋件，在一也與該鞋底結合之織物之窗口中，該鞋底與一標記連接元件模製在一起。

本發明之一特徵為一鞋之鞋墊具有一單獨一塊彈性材料，該彈性材料具有跟部以及被一在該墊底部上之間隙環繞的緩衝部，該間隙是由一具有大約與一厚度比該墊其他

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部份大之緩衝部底面同一平面的脊所環繞。該緩衝部，間隙與脊係形成可使得當該墊被定位其中之鞋的使用者腳跟剛開始撞擊一被橫越之平面時，該緩衝部被壓且膨脹進入該間隙中。

該墊最好具有一延伸在該跟部四週並沿著一鞋背部延伸而界定出一拱形支持物的側壁，該側壁以一大於在一鞋面之側壁與該鞋之鞋底之間之角度的角度由一界定該跟部之底面的平面延伸，所以該墊之側壁必須彎曲以便嵌入該鞋中。

本發明的另一特徵是，該墊具有一具有多數底面胎紋的趾部，該等底面胎紋將該趾部之底面與該墊位於其中之鞋的鞋底內面隔開，該等胎紋係定位，配置且形成一形狀以便將該彈性墊與該底之內部之間的滑動減至最小。

另一個特徵是，該趾部具有在其底與頂之間的開口以供空氣由一在該墊之底與頂面以及該鞋底之內面之間的間隙通過到達一在該墊之頂面上方的區域。

本發明的另一個特徵是，該墊是射出成型的而且一織物層係模製於該墊之上表面上，該織物層係被一在該墊上表面中之槽環繞，該槽係在以一具有用以在模製時將該織物層保持定位之內壁的模穴射出成型該墊時形成。在一實施例中，該槽係被一具有一窗之織物塗層所環繞，在該窗中該織物層係被該槽所環繞。

在一實施例中，該織物層最好是連續的而且沒有開口，該織物塗層最好也是連續的且沒有開口，但是在窗處有

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一開口。在另一實施例中，該鞋底部份具有一鞋之鞋底，該鞋具有一利用與該結構之上表面模製在一起而結合的織物襯墊而且該襯墊具有一由該槽界定出之窗。該槽最好有一側壁與一基底，該襯墊係利用模製法與該基底結合而且該側壁向外張開遠離該窗。

本發明的另一個特徵是，一鞋件具有一彈性足墊，該足墊具有分別與該鞋底之內部上表面以及該鞋鞋面之內側壁表面配合之底與外表面，該墊具有一嵌入在該鞋底內部上表面中之一凹洞的向下垂直跟緩衝部。該緩衝部具有當沒有負荷加在該鞋底之底跟部上時一與該凹洞之一地板以及該凹洞之側壁分開的底表面，該緩衝部向外朝向該凹洞側壁膨脹而且在該緩衝部底表面與該凹洞地板之間的空間在該鞋件之跟部撞擊一欲橫越之表面時減少。

本發明的另一特徵是一鞋件包括一具有一窗之襯墊，該窗具有在該襯墊中界定出一開口的邊緣，一具有一上內部表面之模製鞋底係與該襯墊模製在一起並且與一大小與位置設置成幾乎延伸至該窗邊緣以便經由該窗看見的織物層一起模製。該織物層最好由一在該上表面中之槽所環繞，該槽係於該鞋底部份利用一具有一用以在模製時將該織物層保持在定位之內壁的模穴來射出成型時形成。

本發明之另一特徵是一鞋件之鞋底部份具有一有織物層與該結構之上表面模製在一起的射出成型彈性結構，該織物層有一由在該上表面中之一槽所環繞的邊緣，該槽係於該鞋底部份利用一具有一用以在模製時將該織物層保持

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在定位之內壁的模穴來射出成型時形成。在一實施例中，該邊緣係位在該織物之內部而在第二實施例中該邊緣係位在沿在該織物中之一窗的內邊緣處。

本發明另一特徵是一用來形成該足墊之塑膠化合物具有一加入其中用來增加香味的第二材料，特別是松樹油。

本發明另一個特徵是有關一藉由將一織物層插入一界定一模穴之一部份之模零件部份中來製造一足墊或一鞋之鞋底的方法，其中該模穴零件具有伸入該模穴中之壁，該模穴壁之形狀可將該織物層固持定位，塑膠材料被射入該成型之模穴，因而該織物層係被該材料抵靠於該模零件之一面上而且該材料流抵於該壁上，該壁最好由與該織物質疊置並且完全包圍該織物層之模穴之一部份向該模零件面成錐形。

在一實施例中，該方法係用以製造一具有一鞋面之鞋，一襯墊與該鞋面連接而且該壁界定出一有該層置於其中的圍繞區域。該襯墊具有一當該鞋面起先被放在該模零件上時環繞該圍繞區域的週邊，該襯墊之一區段由在該壁外側之模零件面一部份延伸到該壁之上表面並且當該鞋面起初被放在該模零件上時與該模零件面之一區段以及該壁之外表面分開。該塑膠材料以足夠之力量被射入該模穴中以便將該襯墊區段推抵在該模零件面之區段以及該壁之外表面上，該塑膠材料最好是射入該穴中在該壁之前方與後方。

本發明之上述以及其他目的，特徵與優點將由以下數

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個實施例並配合附圖詳細說明之。

第1圖是本發明一較佳實施例之足墊的立體圖；

第2圖是第1圖中所示之足墊的底視圖；

第3圖是沿第1圖之直線3-3所做之橫截面圖；

第4圖是沿第1圖之直線4-4所做的縱截面圖；

第5圖是第1-3圖中所示之足墊以及一特別設計來容納該足墊之鞋的一部份的橫截面圖；

第5A圖是當一足在該鞋中而且該鞋之跟部撞擊一欲越過之表面時在第5圖中所示的結構的視圖；

第6圖是在第5圖中部份地所示之鞋中第1-3圖所示之足墊的部份側截面圖；

第7圖是一用以製造在第1-4圖中所示之足墊的一穴模製裝置的部份橫截面圖；

第8圖是本發明一第二實施例一適於讓一鞋底部份附著其上的帆布鞋面的立體圖，其中部份為虛線；

第9圖是在第8圖中所示一具有一鞋面之以加州法製成之鞋以及本發明第二實施例之一鞋底元件的部份橫截面圖；

第10圖是在第9圖中所示之鞋的部份縱向截面圖；

第11圖是一用以在模製材料被射入一模穴中之前，形成在第9與10圖中所示之鞋的模製裝置的部份橫向截面圖；

第12圖是在將一塑膠模製材料射入該模穴中之前，在第11圖中所示之模製裝置的部份縱向截面圖；以及

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第13圖是在該塑膠材料已經被射入該模穴中之後，在第11圖中所示之結構的部份橫向截面圖。

現請參閱圖示中之第1-4圖，其中彈性射出成型足墊10最好是由一熱塑性橡膠(TPR)化合物，(特別是KRATON)，或一聚氯乙烯(PVC)化合物製成，而且具有趾部12，中足部14與跟部16，中足部14與跟部16具有由趾部12之一側之後方部份延伸到該趾部之另一側之後方部份，完全環繞在該中足與跟部的向外與向上呈錐拔狀的側壁18。該側壁18之中間部份(在該足之內側)係被加大以形成一拱形支持物20，為在該側壁18在拱形物20附近提供堅硬度，該側壁18在該拱形區域內具有橫向延伸肋21。相對該足墊10底平面之該側壁18之相向面對部份的角度可使該等側壁部份在該墊被放入一鞋中時必須被推向對方，如第5圖中所示，以便當其中有該墊之鞋在使用時對該墊與使用者提供穩定性。該等側壁部份之角度由當該墊10係在該鞋外側時之約45°改變成當該墊係在一特定鞋時之約60°。

由該足墊10之底面22延伸出的是水滴狀跟緩衝部24與具有該墊橫向為三角形橫截面的Z字形胎紋26，如第4圖中所示。趾部12具有由該底面22延伸到該足墊頂面30的相當小的孔28，脊32完全延伸環繞在該底面22內部四週。凹溝34將該緩衝部24之背與側部與脊32以及靠近該緩衝部24之胎紋26末端分開，該緩衝部24，胎紋26與脊32之底面是大約共平面的。

結合在該頂面30之中足與跟部14與16上的是基本上形

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成一在該墊10頂面上之塗層的織物(布)襯裡36，襯裡36具有與在該墊10之上表面與該墊之側壁18之交界一致之邊緣，該邊緣由一從在該足墊之內側12之趾部後方延伸，通過拱形支持物20與跟區域16之背面到達該趾部12之外側後方的區域中延伸出來。襯裡36大致橫向地延伸越過該趾部12之後方與中足部14之前方。

由於該襯裡36在該墊10之射出成型過程中係以下述方式與該墊10連接，襯裡36可以是連續的，但是位在跟部16中之矩形窗38處除外。該襯裡36之連續性，除了在該窗38處之外，使得該襯裡具有一可與形成墊10之彈性材料顏色不同的明亮，具有裝飾性的顏色，這與習知配置者相反，在習知配置中一織物結構係與由與該織物相同之暗色材料製成之射出成型鞋底連接，如在Pastor之美國專利第5,247,741號中所揭露者。在習知配置中，該織物係由一刺穿該織物並產生一欲形成在其中的孔的釘等連接在一模上。為避免使用者感覺出該孔之存在，該鞋底與織物係以一暗色材料製成。

在窗38中的是一具有標記之裝飾性矩形織物襯裡40，該標記為，例如該墊或該墊在其中的鞋的尺寸，以及該墊或該墊在其中的鞋的品牌。裝飾性襯裡40在該窗38之邊緣內也是連續的而且有一與該窗戶之邊緣配合並稍小的周邊。

窗38之邊界將襯裡36與40分開並具有一梯形橫截面，如第3-6圖所示，該窗邊界界定出在襯裡36與40之間的間

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隙42。該梯形可使一在以下配合第7圖所述之模在墊10之射出成型過程中將襯裡36與40固定。

第1-4圖之足墊10可以在任何具有與該足墊長度大約相同的鞋或其他鞋具中使用，該足墊對穿著其中有該足墊之鞋的穿著者提供穩定性與舒適感，因為有由靠抵其中有該足墊之鞋之側壁的緩衝部20，脊32與側壁18提供的緩衝效果，以及因為有整個足墊之彈性本質。足墊10相對它被置於其中之鞋所產生的滑動係可避免，因為胎紋26具有相當銳利的邊緣靠抵在其中置有墊10之鞋之鞋底內面。在行走時，當一鞋之跟部起初撞擊一欲橫過之表面時，緩衝部24如脊32一般橫向地分散進入該間隙34中以提供緩衝效果。該緩衝部24之淚滴形狀有助在行走時的正確足部內轉動作，因為有比在該緩衝部之前方部份中更大之接觸面積朝向該緩衝部之背面。

在中足部14與趾或前足部12之緩衝效果係被加強，因為有一由在該墊10底面22與在其中置有該墊之鞋之中足與前足部份中的上表面43之間之胎紋所形成的空氣間隙，如第6圖中所示，在由胎紋26所形成在該等面22與43之間的空氣間隙，以及開口28，使空氣流到該穿著者之足部來提供一冷卻效果並除去溼氣。

該墊10之緩衝效果係在一具有一特殊設計之鞋底的鞋44中被增強，如第5，5A與6圖中所示，鞋44具有連接鞋底48之習用鞋面46，該鞋面46可由任何習用之材料製成。在較佳實施例中，鞋底48係射出成型的而且在該模製過程

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中與該鞋面46連接，鞋底48具有一凹洞45位於其中的上內面43，該凹洞45具有一在該鞋底之跟部中與緩衝部24之形狀與位置大致符合之形狀與位置，但是凹洞45具有一比緩衝部24之外邊界稍大的外邊界，所以該緩衝部可以在該穿著者之足橫越過一表面時自由地由該凹洞移進移出，如第5與5A圖中所示，凹洞52之外邊界係在介於該緩衝部24與脊32之間的間隙34下方。墊10係固定該鞋44中，所以脊32係置於該鞋底48之上表面43上，（鞋底48之上表面43係由任一可用之形成鞋底之材料或形成鞋面之材料所形成）。凹洞45具有一高度，因此除了在介於鞋底48之底面49跟部與欲橫越之表面間產生撞擊時之外，在緩衝部24底面與該凹洞之底47之間存在一空氣緩衝部，在撞擊時，緩衝部24係向下彎入該凹洞45中，而且該緩衝部之底面與凹洞之底47交錯，如第5A圖所示。這為該鞋之使用者以一相當便宜之方式提供相當好的舒適性，在撞擊已發生後，緩衝部24回到其原來位置，如第5與6圖所示。

由於形成墊10之彈性材料與相對該墊10底平面之側壁18的角度，該墊之側壁18在一足是在具有該墊之鞋44中，如第5A圖所示，以及在未具有凹洞45之習用鞋中時與該等鞋44之側壁配合一致。不需要黏著劑來使墊10保持在該鞋中，在使用時，墊10之寬度可使該脊32之外部與該鞋底48之側壁結合，這使得該等側壁18之外部在使用時緊抱鞋底48之內部側壁而且可能抱緊該鞋面46，以便增加對使用者的穩定性與舒適性。

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現請參閱第7圖，係一用來形成第1-4圖足墊的模製裝置的部份橫截面圖，第7圖中之裝置具有頂與底模半部50與52，以及環模半部54與56。通常，模零件50-56似類似用來形成在鞋中之射出成型鞋底的模零件，例如在前述Pastor之專利中所揭露者。底模半部52具有一用以將熱射塑性材料經由一通道62射入該模穴中60中的導管58，該通道62位於該模穴中介於形成該緩衝部24之該結構之前端與朝向該中足部份14之後方之間。

模穴60具有一與該足墊10之形狀一致之形狀，為達此目的，該頂模半部50之上表面具有梯形側壁或凸片64與66，梯形凸片64與66在該穴60之內部具有一比沿著該模件50之頂面還大的基底，因此該等凸片具有有助於在模製時使該等織物襯裡36與40保持定位的向外伸展開的側壁68。織物襯裡36與40保持定位的向外伸展開的側壁68。織物襯裡36與40因此形成該模穴60之頂部以及該足墊10之頂面，而且是回應被射入該模穴中之塑膠材料而形成。在射入該模穴之塑膠材料硬化後，襯裡36與40與該塑膠材料結合而形成單一完整結構之墊。在該塑膠材料已經夠硬了之後，將所形成之產物由該模穴60中取出。因為織物襯裡36與40係由延伸進入該模穴之凸片64之展開壁加以定位在該模穴60中，所以不需要釘子或其他刺穿該織物之結構。

在較佳實施例中，墊10係由熱塑性橡膠或聚氯乙烯，這兩者具有一芳香物質，最好是一松樹香料加入其中以提供一令人愉快的芳香並克服可能之令人討厭的氣味。熱塑

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性塑膠係一較佳之材料，因為它本身的彈性，如果使用聚氯乙炔，一氣態發泡劑係被加入該聚氯乙炔化合物中以便將聚氯乙炔之比重由大約1.2降低到大約1.0，以提供該形成之產物內部一氣泡似的密度結構。液態松樹油被加入聚氯乙炔或熱塑性橡膠化合物中，使得該松樹油具有佔形成該足墊之化合物總重的約1個重量百分比的重量。該熱塑性橡膠化合物除了該松樹油之外還包括一般的組成物，即KRATON熱塑性樹脂，提供硬度之聚苯乙烯晶體，潤滑劑，抗氧化劑，熱穩定劑，碳酸鈣填充劑，一可塑劑，以及提供抗磨性之砂。該聚氯乙炔組成物包括聚氯乙炔及除了松樹油以外的前述其餘構成物，此外，色劑若有需要也可加入而且一發泡劑以極少之量加入該聚氯乙炔化合物中。

在一較佳實施例中，緩衝部24具有5mm的厚度而且凹洞45在緩衝部之底面22與凹洞面47之間，在無負載之情形下，具有一約2mm之厚度。趾部12之厚度約為2mm而且各胎紋之高度約為1mm，在該緩衝部24之頂面與側壁24之間的彎曲面曲率半徑為1/4英寸，位於一平行延伸於該緩衝部頂面與側壁18之交叉線之間的第一線與一由該彎曲表面起始處之點垂直向下延伸的第二線的交叉點上。這曲率半徑有助於提供所要的可撓性以便使側壁18可以由第3圖中所示之位置向內壓到第5與5A圖所示的位置，在模60中之梯形64與66具有長度分別為1.5mm與1.1mm的大與小基底。

因為襯裡36與40係被定位在模穴60中，所以該襯裡之

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邊緣沿著模零件50之底面51抵靠傾斜側壁68與模穴60之頂部的交叉線，足墊之成本因此在相較於標籤或襯裡黏在該等足墊上的習用配置時是較低的，在習用技術中，該標籤大致係在該足墊完全由一轉移方法或由塗膠水或車縫等方式加以附著。當該模穴如此配置而使標籤定位時，成本會降低，因為有一個步驟被省略而且不需要個別的結合劑。此外，習用標籤通常不會適當地保持附著在該足墊上，因為膠水會失效。另外，穿著一具有黏在或縫在該足墊上之標籤的鞋的人會感覺到該標籤存在，同時，在習用技術中，該標籤通常無法一致地置於該足墊中。本發明之配置克服了所有的上述缺點，因為襯裡36與40在形成該足墊時變成該射出成型之足墊結構的一部份。由於襯裡36與40形成該模穴之底部，穿著該足墊之人將不可能感覺出該織物的厚度，藉著將該等襯裡36與40定位在一由梯形橫截面壁64所形成之矩形所界定之結構中，該等織物纖維可以具一致性地放置。

本發明的某些原理也可以用以形成射出成型之鞋底，特別是例如用於由加州法製造之鞋面的鞋底上，如第8圖所示。第8圖中，以加州法製成之鞋面70包括一般的鞋面72部份，最好是由帆布或一些其他材料製成，以及縫在該鞋面部份72的襯墊74。該襯墊74之跟部具有矩形窗76，窗76最好是包含在襯墊74之跟部中，因此尺寸與其他在一織物層上之辨識標記可以讓一使用者或購買者經由該窗很容易地被看見。

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鞋底78係利用射出成型結合於襯墊74與鞋面72之下區段上以形成如在第9與10圖之橫與縱向截面圖中所示之結構，鞋底78可由任何適當之材料製成，例如前述之聚氯乙稀與熱塑性橡膠，而且可以有或沒有松樹油香味。經過該窗76顯示之襯墊74與織物層標籤80，以及鞋面70之下區段係在該射出成型過程中與該鞋底78結合，因此該鞋底之上表面與該標籤及襯墊之下表面係結合在一起。標籤80係由一完全環繞該標籤之梯形間隙82與襯墊74分開，該梯形橫截面之間隙82係可使靠近鞋底78之底面84的基底比在該鞋底之頂面處之梯形的基底來得大。形成標籤80與襯墊74之織物頂面大約是共平面的，因此當一使用者以他的手指由標籤80滑過到該襯墊74時將不會沿著該鞋底78之內面感覺到高度差。該襯墊74之織物緊抱住間隙82之底部基底與外側牆88。

為了要形成第9與10圖中部份地顯示之鞋，由加州法製成之鞋面70係連接到一部份地顯示在第11-13圖中的開口之鞋型90上，開口鞋型90係習用的，但它包括具有一梯形橫截面的凸片或壁92，包括向外呈錐狀側壁94，以及小上基底96與放大之下基底98。凸片延伸進入由下模半部102與類似第7圖所示之模環之模環（未顯示）所形成的模穴。在該等凸片92之間放置織物標籤，因而使該織物標籤之矩形邊緣抵靠內側壁94與基底96以保持定位。當鞋面70起初被放在鞋型90上時，襯墊74之邊緣部份104延伸超過基底98與側壁94之交叉線，以便部份地遮蓋標籤80。在

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塑膠被射入模穴之前大多數的襯墊74與該鞋型90之底面緊密地接觸，但是，在該襯墊接觸面106與延伸到該梯形壁92之基底98之間的襯墊74的區段110係與該面106分開。

熱塑性材料最好是經由在模半部102中之導管112與通道114與116射入該模穴100中，通道114與116分別是在由梯形橫截面壁92界定之矩形區域前方與後方，如第13圖所示，以確使該熱塑性材料對襯墊74於該壁92之前方與後方施加適當的力量。回應施加在襯墊74上的力量，該襯墊在射出成型之過程中由在第11與12圖中所示之位置移動到第13圖中所示之位置，所以襯墊之邊緣部份104大致與側壁94與基底98之交叉線成一直線而且該襯墊之一部份110緊抱壁92之外側表面118。因此一平滑之上表面係形成在加工完成之鞋的鞋底內部而且如以上所述在織物標籤80與襯墊74之上表面之間的平滑關係可以得到。因此，當鞋底78係射出成型於鞋面70時，襯墊74區段110係被轉換成為第9與10圖中在加工完成之鞋中的側壁部份88。

因為織物標籤80係在射出成型之過程中以類似襯裡40與該足墊連接之方式來與該鞋底78連接，所以上述許多襯墊36與40的優點在織物纖維或標籤80上也有。

雖然本發明已揭露與說明數個特定實施例，許多對所揭露與說明之實施例之細節，在不違反本發明之精神與範疇之情形下所做之變化，均應涵蓋在以下之申請專利範圍內。

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六、申請專利範圍

1. 一種具有一單一塊彈性材料之鞋的足墊，該足墊具有一跟部與一穿著者之足底形狀大致相同的形狀，該跟部具有一緩衝部，該緩衝部係被一在該墊底面上之間隙所環繞，該間隙係被一具有大約與該緩衝部之底面同一平面之底邊緣的脊所環繞，該緩衝部之厚度比該墊之剩餘部份來得厚；該緩衝部，間隙與脊係被製成可使該緩衝部在一使用其中固設有該墊之鞋者的跟部撞擊一欲橫越之表面時被壓入且膨脹進入該間隙。
2. 如申請專利範圍第 1 項所述之足墊，其中該墊具有一延伸在該跟部四週並且沿著一鞋背部份以界定出一拱形支持物的側壁。
3. 如申請專利範圍第 1 項所述之足墊，其中該側壁由一界定該跟部之底部之大致平坦之面以一大於在一鞋面之側壁與該鞋之鞋底間之角度的角度延伸，因而該墊之側壁必須彎曲以便嵌入該鞋內並且靠抵該鞋之側壁部份。
4. 如申請專利範圍第 1 項所述之足墊，其中該墊還包括一趾部，該趾部具有多數將該趾部之底面與其中置有該墊之鞋之鞋底之上表面分開的胎紋，該等胎紋係被固定，配置且製成可將在該墊與該鞋底內面之滑動減到最小的形狀。
5. 如申請專利範圍第 4 項所述之足墊，其中該趾部具有在其底與頂面之間的開口以便讓空氣通過在 (a) 一介於該墊之底與頂面以及該鞋底之內面間の間隙以及 (b)

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一在該墊之頂面上方的區域之間。

6. 如申請專利範圍第1項所述之足墊，其中該墊是射出成型的，一織物層與該墊之上表面模製在一起，該織物層係被一在該墊之上表面中的槽所環繞，該槽係在以一具有一用以在模製時將該織物層保持定位之內壁的模穴將該墊射出成型時形成。
7. 如申請專利範圍第6項所述之足墊，其中該槽係被具有一窗之另一層織物所環繞，在該窗中該織物層係被該槽所環繞。
8. 如申請專利範圍第6項所述之足墊，其中該彈性材料包括一液態芳香劑，該芳香劑係包含在形成該墊之射出材料中。
9. 如申請專利範圍第6項所述之足墊，其中該彈性材料包括一液態芳香劑。
10. 如申請專利範圍第9項所述之足墊，其中該液態芳香劑是松樹油。
11. 一種具有一射出成型彈性結構之鞋的鞋底部份，該彈性結構具有與一穿著者足之底部形狀相同之形狀，一織物層與該結構之上表面模製在一起，該織物層係被在該上表面中之槽所環繞，該槽係在以一具有一用以在模製時將該織物層保持在定位之內壁的模穴將該鞋底部份射出成型時形成。
12. 如申請專利範圍第11項所述之鞋底部份，其中該織物層係連續的而且沒有開口。

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六、申請專利範圍

13. 如申請專利範圍第11項所述之鞋底部份，其中該槽係被一具有一窗之織物塗層所環繞，在該窗中該織物層被該槽環繞。
14. 如申請專利範圍第11項所述之鞋底部份，其中該織物塗層係連續的而且除了該窗所在處之外沒有開口。
15. 如申請專利範圍第11項所述之鞋底部份，其中該鞋底部份包括具有利用與該結構之上表面模製而結合之織物襯墊的鞋的鞋底，該襯墊具有一由該槽界定之窗。
16. 如申請專利範圍第15項所述之鞋底部份，其中該槽具有一與該襯墊以模製法結合的側壁。
17. 如申請專利範圍第16項所述之鞋底部份，其中該側壁由該窗向外展開。
18. 如申請專利範圍第15項所述之鞋底部份，其中該槽具有一由該上表面取下之側壁與基底，該襯墊與該側壁及基底以模製法結合。
19. 一種鞋之足墊，包括一單一塊具有跟部以及與一穿著者之足底形狀相同的彈性材料，一趾部，該趾部具有將該趾部之底面與其中置有該墊之鞋之鞋底內上表面分開的多數胎紋，該等胎紋係被定位，配置並製成可使在該墊與該鞋底之內表面間的滑動減到最小的形狀，該趾部具有在其底與頂面之間的多數開口以便讓空氣流經在(a)一介於該墊之底與頂面以及該鞋底之內表面之間的間隙以及(b)一在該墊之頂面上方之區域之間。

(請先閱讀背面之注意事項再填寫本頁)

六、申請專利範圍

20. 一種鞋，包括一鞋面，一具有一內上表面之鞋底，一具有與該鞋底之內上表面以及該鞋面之側壁表面相配合之底與外表面的彈性中底，該中底具有一嵌入一在鞋底內上表面中之凹洞的下垂跟緩衝部，該緩衝部具有一當該鞋底之底跟部上未施加負載時與該凹洞之底與側壁分開的底表面，該緩衝部向外朝著該凹洞側壁膨脹而且在緩衝部底表面與該凹洞底之間的空間當該鞋之跟部底面撞擊一欲橫越之表面時減少。
21. 一種鞋，包括一鞋面，一具有一窗之襯墊，該窗具有在該襯墊中界定出一開口的邊緣，一具有與該襯墊模製在一起之上方內表面的模製鞋底，該上方內表面係與一大小與位置製成幾乎延伸到該窗之邊緣以便看穿該窗的織物層。
22. 如申請專利範圍第21項所述之鞋，其中該織物層係被一在該上表面中之槽所環繞，該槽係在以一具有一用以在模製時將該織物層保持定位之內壁的模穴將該鞋底射出成型時形成。
23. 一種鞋之鞋底部份，包括一具有與一穿著者之足之底面形狀相同之形狀的射出成型彈性結構，一與該結構之上表面模製在一起的織物層，該織物層具有一被一在該上表面中之槽所環繞的邊緣，該槽係在以一具有一用以在模製時使該織物層保持定位之內壁的模穴將該鞋底部份射出成型時形成。
24. 如申請專利範圍第23項所述之鞋底部份，其中該邊緣

(請先閱讀背面之注意事項再填寫本頁)

六、申請專利範圍

是在該織物之外部。

25. 如申請專利範圍第23項所述之鞋底部份，其中該邊緣是沿著在該織物中一窗之內緣。

26. 一種製造一足墊或一鞋之鞋底的方法包括在一界定一模穴之一部份之模零件之一部份中插入一織物層，該模零件具有伸入該模穴中之壁，該模穴壁之形狀可將該織物層保持定位，然後形成該模穴，以及將塑膠材料射入所形成之模穴中，因此該織物層被該材料頂靠在該模零件的面上而且該材料流抵於該壁上，然後在該材料不再是塑膠狀態後打開該模。

27. 如申請專利範圍第26項所述之方法，其中該壁係由疊置有該織物層之模穴之一部份向該模零件面成維狀。

28. 如申請專利範圍第27項所述之方法，其中該壁完全環繞該織物層。

29. 如申請專利範圍第26項所述之方法，其中該方法係用來製造一具有一有一襯墊與其連接之鞋面的鞋，界定有該層置於其中之包圍區域的壁，將與該襯墊連接之鞋面放在該模零件上，該襯墊具有一窗，該窗有一當該鞋面起先被放在該模零件上時環繞該包圍區域的周邊，一該襯墊之區域由在該壁外側該模零件之一部份延伸到一該壁之頂表面而且當該鞋面起先被放在模零件上時與該模零件面之區段以及該壁之外表面互相分開，該塑膠材料係以一足夠之力量射入該模穴中以便使該襯墊區段推頂該模零件面之區段與該壁之外表面

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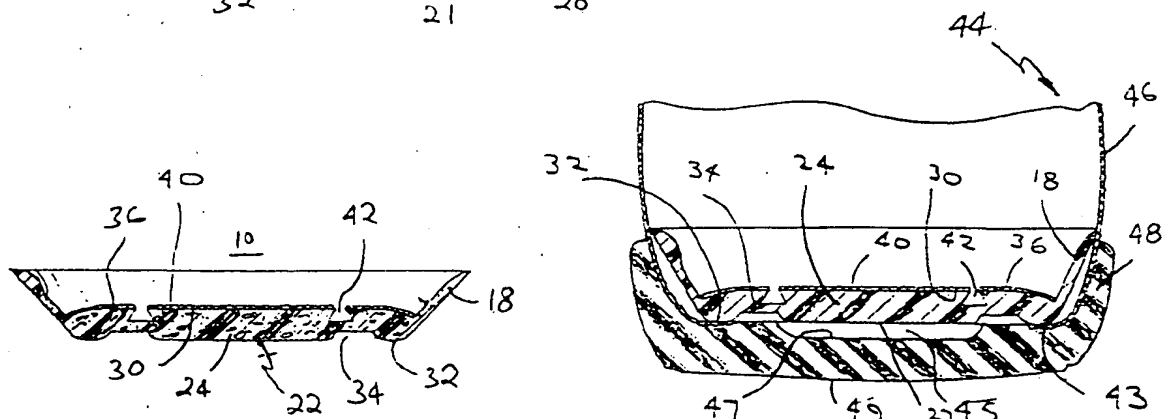
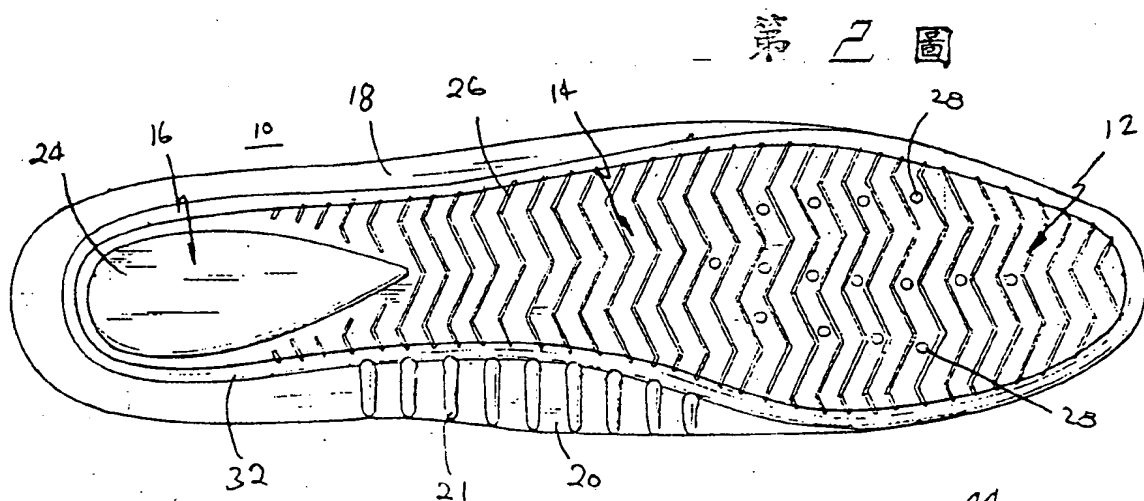
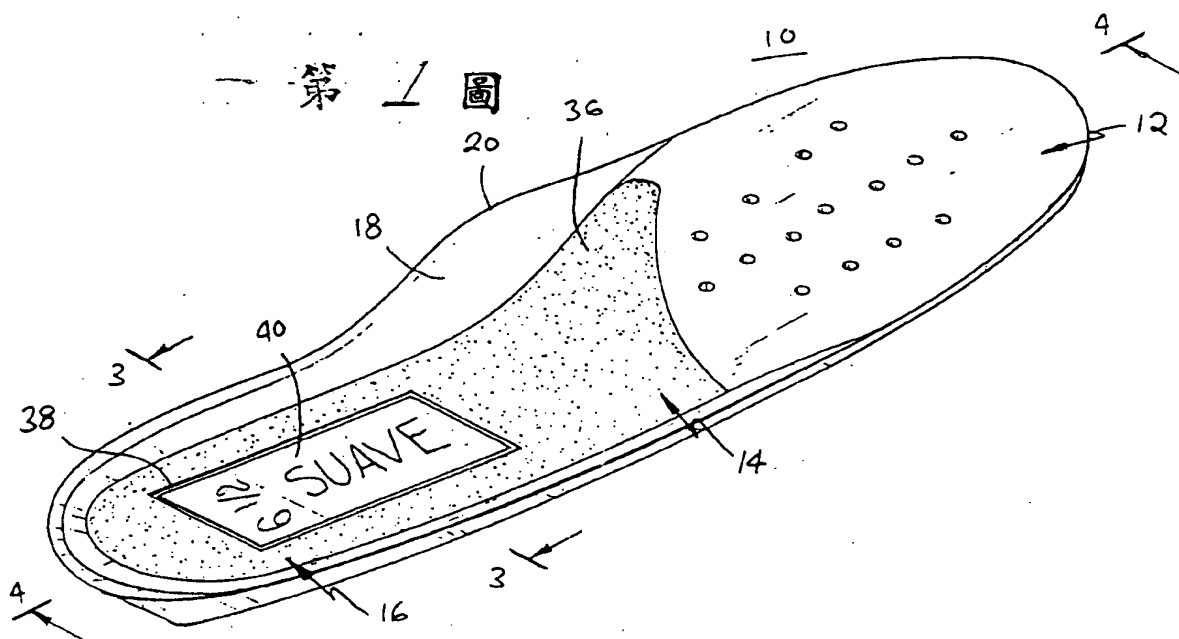
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A7
B7
C7
D7

六、申請專利範圍

30. 如申請專利範圍第29項所述之方法，其中該塑膠材料係在該壁前方與後方射入該模穴中。

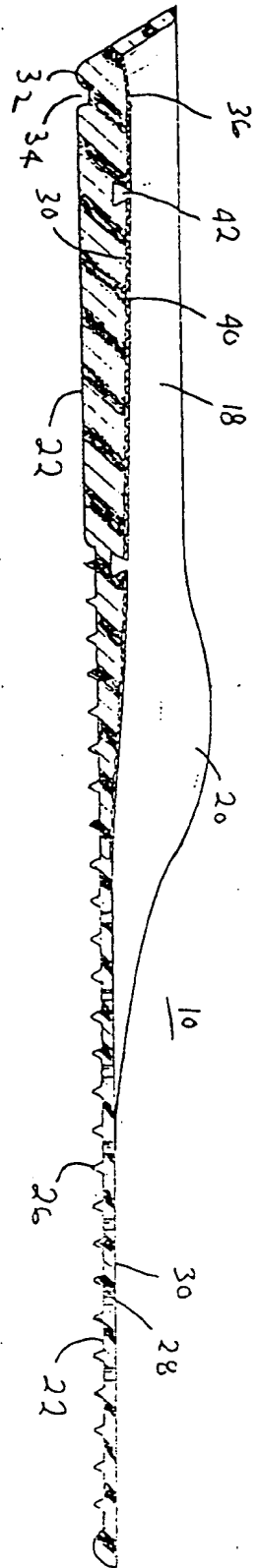
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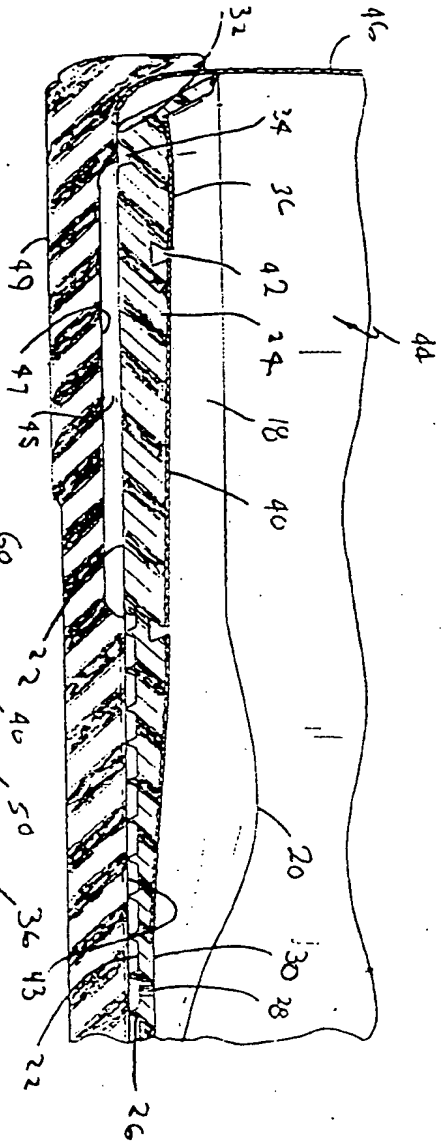
第三圖

第四圖

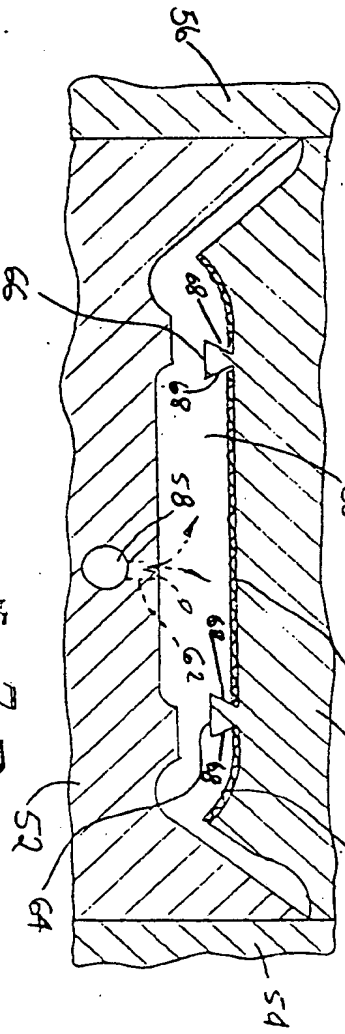
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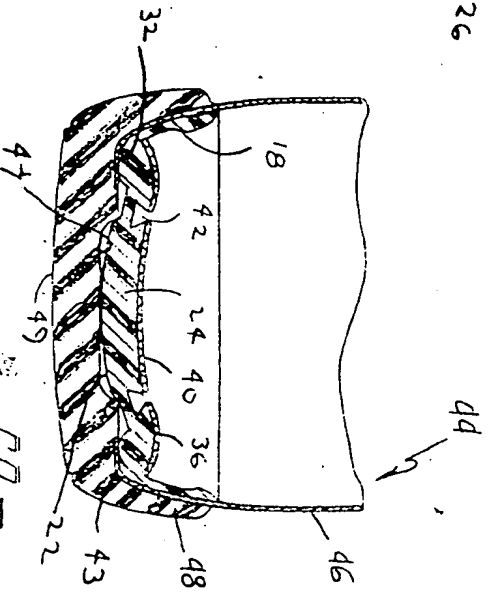
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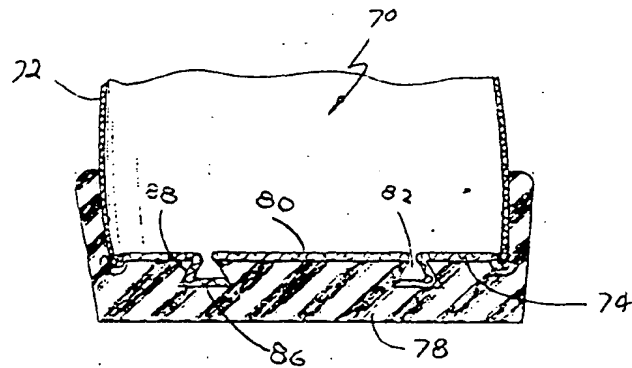
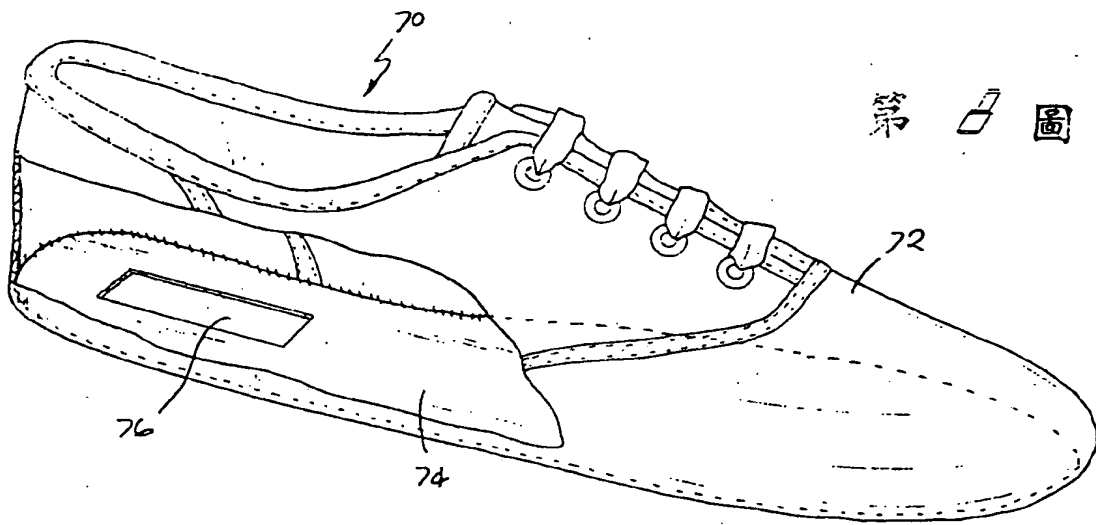
第 7 圖



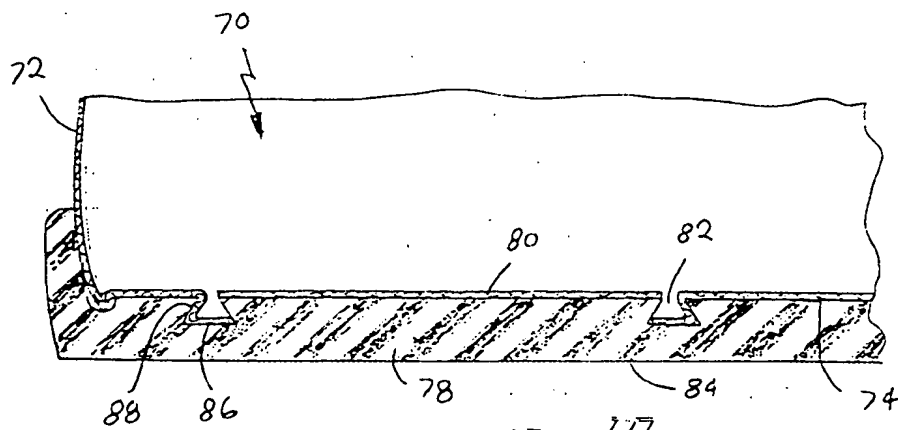
第 5A 圖



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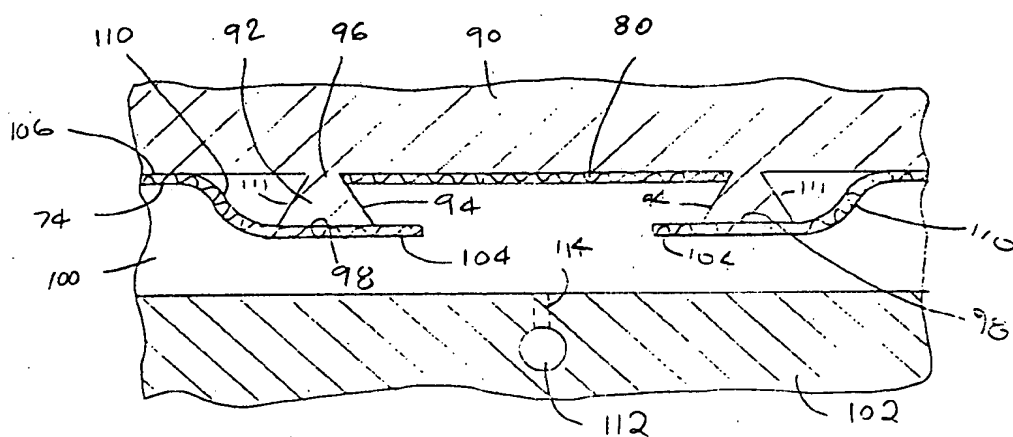


第 9 圖

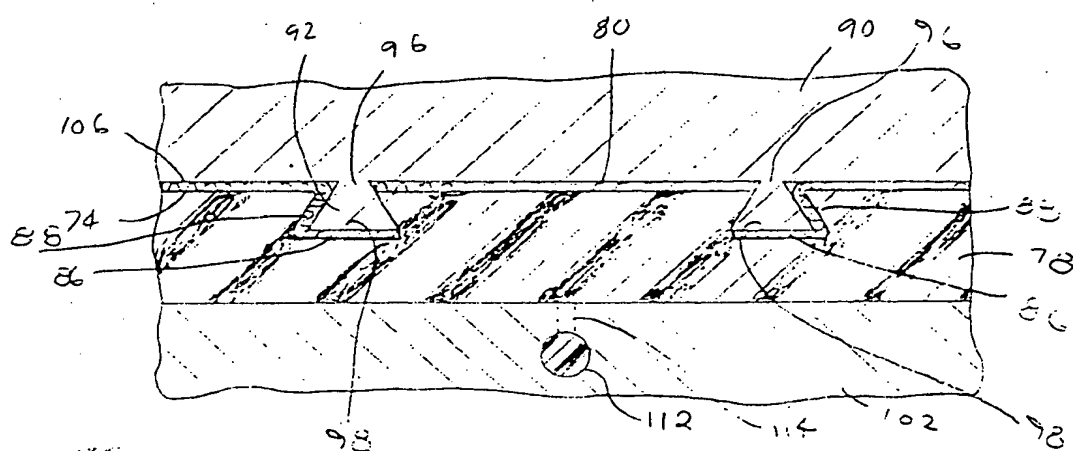


第 10 圖

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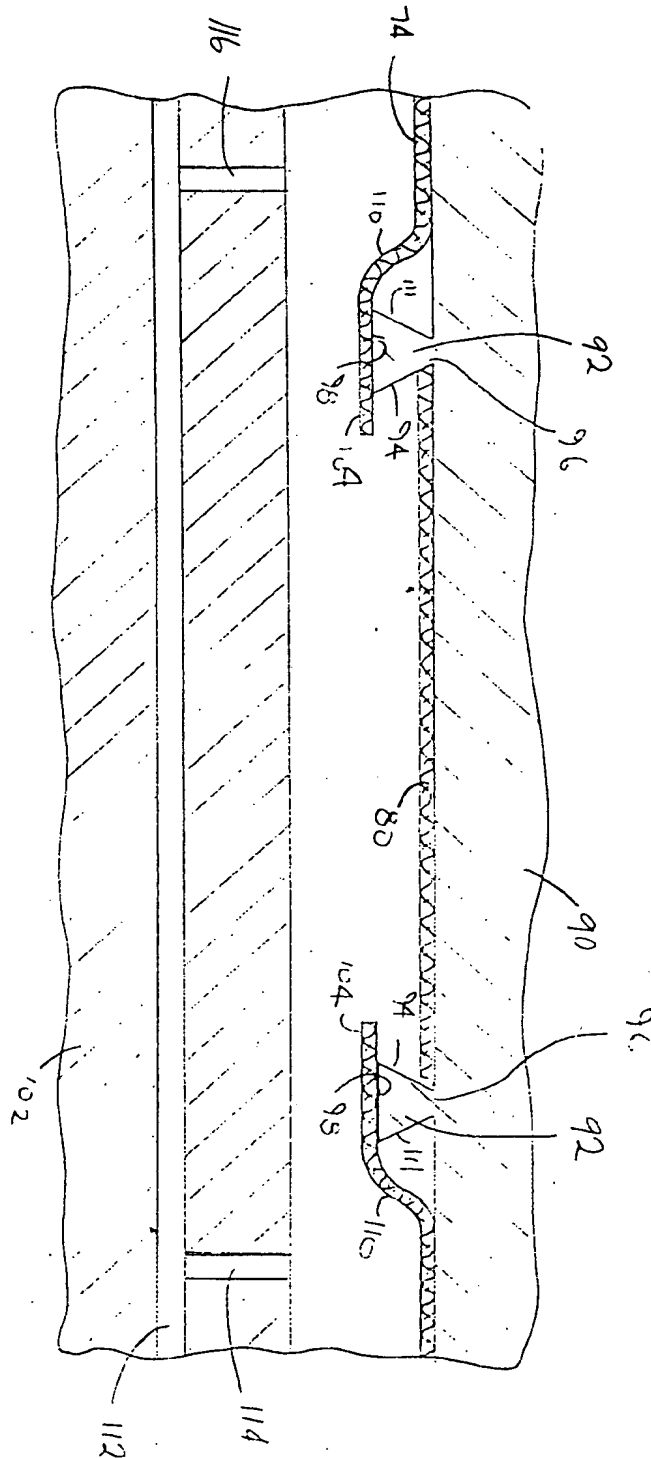


第 11 圖



第 12 圖

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第 12 圖

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312-020

INJECTION MOLDED ELASTOMERIC SOLE COMPONENT,
SHOE INCLUDING SAME AND METHOD OF MAKING SAME

Technical Field

5 The present invention relates generally to elastomeric sole components, footwear including such sole components and to a method of making such sole components and footwear incorporating same, and, more particularly, to injection molded sole components having fabric liners bonded to them during the injection molding process and to foot pads having improved cushioning capabilities.

Background Art

10 Sole components for footwear, including foot pads, are commonly sold as inserts with the footwear and as separate accessory units to be added by a user to footwear. The most common type of foot pad that is sold as a separate accessory unit includes several fibrous
15 plies of material similar to that used to make paper. The life of this type of foot pad is quite limited and the pads provide little, if any, support to the user. While foot pads made of elastomeric material have been developed, they are usually relatively expensive,
20 probably because high volume production techniques have not been used to make them.

 Foot pads that are sold as inserts with footwear, particularly athletic type footwear, are usually molded structures. Such inserts usually only accompany
25 relatively high priced athletic type footwear, probably

because of the expense involved in manufacturing the inserts.

5 It is common practice for manufacturers of sole components, including foot pads, to put a decorative design or a trademark or other indicia on the upper surface of the sole components. In the past, it has been the general practice to put the indicia on the sole component after the component has been manufactured. The indicia frequently are applied by a transfer process or
10 by sewing a fabric label onto the sole component. Both of the foregoing processes require an additional step after the sole component has been made, thereby adding to the cost of the article. In addition, frequently the indicia are not accurately placed on the sole component,
15 in which case the sole component or the footwear of which it is a part cannot be used as first quality merchandise.

It is, accordingly, an object of the present invention to provide a new and improved sole component for footwear, which component is made by a relatively
20 inexpensive injection molded production process, and to a method of making same.

Another object of the invention is to provide a new and improved sole component having a fabric label or other fabric member applied thereto at the time the
25 component is made, and to a method of making same.

A further object of the invention is to provide a new and improved sole component having a fabric member applied to it during injection molding of the sole component, and to a method of making same.

30 An additional object of the invention is to provide a new and improved sole component having a fabric member that is always positioned correctly on the sole component, despite the use of inexpensive, high volume production techniques, and to a method of making same.

An added object of the invention is to provide a relatively inexpensive elastomeric injection molded foot pad having superior cushioning capabilities.

5 Still another object of the invention is to provide a new and improved footwear article having an inexpensive cushioning foot pad, wherein the footwear article has a special structure for receiving the foot pad to enhance cushioning.

10 Yet a further object of the invention is to provide a new and improved footwear article having an injection molded sole with an indicia bearing member bonded thereto in a window of a fabric also bonded to the sole.

The Invention

15 In accordance with one aspect of the invention, a foot pad for a shoe comprises a single piece of elastomeric material having a heel portion and a cushion portion surrounded by a gap on a bottom of the pad. The gap is surrounded by a ridge having a bottom edge that is approximately co-planar with a bottom face of the cushion
20 that has a thickness greater than the remainder of the pad. The cushion, gap and ridge are shaped so that the cushion is compressed and expands into the gap as a heel of a user of a shoe in which the pad is positioned initially strikes a surface being traversed.

25 Preferably, the pad includes a side wall extending around the heel portion and along an instep portion to define an arch support. The side wall extends from a substantially planar face defining the bottom of the heel portion at an angle greater than the angle between the
30 side wall of an upper and the sole of the shoe so the side wall of the pad must be bent to fit within the shoe.

According to another aspect, the pad includes a toe portion with multiple bottom treads spacing a bottom face of the toe portion from an interior face of a sole of the
35 shoe in which the pad is located, the treads are

positioned, arranged and shaped to minimize slippage between the ~~XXXXXX~~ elastomeric pad and the interior face of the sole.

5 According to a further aspect, the toe portion includes openings between bottom and top faces thereof to provide air flow passages from a gap between bottom and top faces of the pad and the interior face of the sole to a region above the top face of the pad.

10 According to an additional aspect of the invention, the pad is injection molded and a fabric layer is molded with the upper surface of the pad. The fabric layer is surrounded by a groove in the upper face of the pad formed during injection molding of the pad by a molding cavity having an interior wall for keeping the fabric layer *in situ* during molding. In one embodiment, the 15 groove is surrounded by a fabric coating having a window in which the fabric layer is surrounded by the groove.

In one embodiment, the fabric layer is preferably continuous and does not include an opening. The fabric 20 coating is also preferably continuous and does not include an opening except where the window is located. In another embodiment, the sole portion comprises the sole of a shoe having a fabric sock liner bonded by molding with the upper surface of the structure and the 25 sock liner has a window defined by the groove. Preferably, the groove has a side wall and base to which the sock liner is bonded by molding and the side wall flares away from the window.

30 In accordance with an additional aspect of the invention, a footwear article includes an elastomeric foot pad having bottom and outer surfaces respectively mating with an interior upper surface of the sole and interior side wall surfaces of the footwear upper. The pad has a downwardly depending heel cushion fitting into 35 a cavity in the sole interior upper surface. The cushion has a bottom surface spaced from a floor and side walls

of the cavity while no load is applied to a bottom heel portion of the sole. The cushion expands outwardly toward the cavity side walls and the spacing between the cushion bottom surface and the cavity floor decreases as the heel portion of the footwear article strikes a surface to be traversed.

According to another aspect of the invention a footwear article comprises a sock liner having a window with edges defining an opening in the sock liner. A molded sole having an upper interior surface is molded with the sock liner and with a fabric layer dimensioned and positioned to extend almost to the edges of the window so as to be seen through the window. The fabric layer is preferably surrounded by a groove in the upper face formed during injection molding of the sole portion by a molding cavity having an interior wall for keeping the fabric layer *in situ* during molding.

A further aspect of the invention is directed to a sole portion for a footwear article including an injection molded elastomeric structure having a fabric layer molded with an upper surface of the structure. The fabric layer has an edge surrounded by a groove in the upper face formed during injection molding of the sole portion by a molding cavity having an interior wall for keeping the fabric layer *in situ* during molding. In one embodiment, the edge is at the exterior of the fabric while in a second embodiment the edge is along an interior edge of a window in the fabric.

Another feature of the invention is that a plastic compound used to form the foot pad has scented material, particularly pine oil, added to it for aromatic purposes.

An added aspect of the invention concerns a method of making a foot pad or a sole of a shoe by inserting a fabric layer in a portion of a mold part which defines a part of a mold cavity, wherein the mold cavity part has walls extending into the mold cavity. The mold cavity

walls are shaped to hold the fabric layer *in situ*. Plastic material is injected into the formed mold cavity so the fabric layer is seated against a face of the mold part by the material and the material flows against the walls. The walls are preferably tapered toward the mold part face from a portion of the mold cavity superposed with the fabric layer and completely surround the fabric layer.

According to one embodiment, the method is used to make a shoe having an upper to which a sock liner is secured and the walls define an encircled region in which the layer is placed. The upper with the sock liner secured thereto is placed on the mold part. The sock liner has a window having a perimeter surrounding the encircled region when the upper is initially placed on the mold part. A segment of the sock liner extends from a portion of the mold part face outside of the walls to a top surface of the walls and is spaced from a segment of the mold part face and outer surfaces of the walls when the upper is initially placed on the mold part. The plastic material is injected into the mold cavity with sufficient force to push the sock liner segment against the segment of the mold part face and the outer surfaces of the walls. Preferably the plastic material is injected into the cavity in front of and behind the walls.

The above and still further objects, features and advantages of the present invention will become apparent upon consideration of the following detailed descriptions of several specific embodiments thereof, especially when taken in conjunction with the accompanying drawings.

Brief Description of the Drawing

Fig. 1 is a perspective view of a foot pad in accordance with a preferred embodiment of the present invention;

Fig. 2 is a bottom view of the foot pad illustrated in Fig. 1;

Fig. 3 is a transverse sectional view, taken through the lines 3-3, Fig 1;

5 Fig. 4 is a longitudinal sectional view, taken through the lines 4-4, Fig. 1;

10 Fig. 5 is a transverse sectional view of the foot pad illustrated in Figs. 1-3, in combination with a portion of a shoe particularly designed to receive the foot pad;

Fig. 5A is a view of the structure illustrated in Fig. 5 when a foot is in the shoe and as the heel of the shoe is striking a surface being traversed;

15 Fig. 6 is a partial side sectional view of the foot pad illustrated in Figs. 1-3 in the shoe partially illustrated in Fig. 5;

Fig. 7 is a partial transverse sectional view of a cavity molding apparatus for producing the foot pad illustrated in Figs. 1-4;

20 Fig. 8 is a perspective view, partly in phantom, of a canvas upper adapted to have a sole component attached to it in accordance with a second embodiment of the invention;

25 Fig. 9 is a partial transverse sectional view of a slip lasted shoe, of the type having an upper illustrated in Fig. 8, with a sole component in accordance with the second embodiment of the invention;

Fig. 10 is a partial longitudinal sectional view of the shoe illustrated in Fig. 9;

30 Fig. 11 is a partial transverse sectional view of molding apparatus for forming the shoe illustrated in Figs. 9 and 10, prior to molding material being injected into a mold cavity;

35 Fig. 12 is a partial longitudinal sectional view of the molding apparatus illustrated in Fig. 11, prior to

injection of a plastic molding material into the mold cavity; and

Fig. 13 is a partial transverse sectional view of the structure illustrated in Fig. 11 after the plastic material has been injected into the mold cavity.

Description of the Preferred Embodiments

Reference is now made to Figs. 1-4 of the drawing, wherein elastomeric, injection molded foot pad 10, preferably manufactured of a thermoplastic rubber (TPR) compound, (particularly KRATON) or a polyvinyl chloride (PVC) compound, includes toe portion 12, midfoot portion 14 and heel 16. Midfoot portion 14 and heel portion 16 include outwardly and upwardly tapered side wall 18 that extends completely around the midfoot and heel portions, from the rear portion at one side of toe portion 12 to the rear portion at the other side of the toe portion. The medial (inside of the foot) portion of side wall 18 is enlarged to form arch support 20. To provide stiffness for side wall 18 in the vicinity of arch 20, the side wall includes transversely extending ribs 21 in the arch region. The angle of opposite facing portions of side wall 18 relative to the plane of the bottom of pad 10 is such that the side wall portions must be pushed toward each other when the pad is placed in a shoe, as illustrated in Fig. 5, to provide stability to the pad and the user while the shoe with the pad therein is in use. The angle of the side wall portions changes from about 45° while pad 10 is outside of the shoe to an angle of about 60° while the pad is in a typical shoe.

Extending from bottom face 22 of foot pad 10 are teardrop shaped heel cushion 24 and zigzag treads 26, having a triangular cross-section transversely of pad 10, as illustrated in Fig. 4. Toe portion 12 includes relatively small apertures 28 that extend from bottom face 22 to top face 30 of the foot pad. Ridge 32 extends

completely around the exterior of bottom face 22. Trough 34 separates the back and side portions of cushion 24 from ridge 32 and the ends of treads 26 in proximity to cushion 24. The bottoms of cushion 24, treads 26 and ridge 32 are approximately co-planar.

Bonded to the midfoot and heel portions 14 and 16 of top face 30 is fabric (cloth) liner 36 that basically forms a coating on the top face of pad 10. Liner 36 has edges that are coincident with the intersection between the upper face of pad 10 and side wall 18 of the pad, from a region that extends from the rear of toe portion 12 on the inside of the foot pad, past arch support 20 and the back of heel region 16 to the outside rear of toe portion 12. Liner 36 extends generally transversely across the rear of toe portion 12 and the front of midfoot portion 14.

Because of the manner in which liner 36 is adhered to pad 10 during the injection molding process for the pad, as described *infra*, it is possible for liner 36 to be continuous, except where rectangular window 38 is located in heel portion 16. The continuity of liner 36, except where window 38 is located, enables the liner to be a light, decorative color that can differ from the color of the elastomeric material forming pad 10. This is in contrast to prior art arrangements wherein a fabric structure was attached to an injection molded sole that was made of the same dark material as the fabric, as disclosed in commonly assigned U.S. Patent 5,247,741, to Pastor. In the prior art arrangement, the fabric was secured to a mold by a nail, or the like, which impaled the fabric and caused a hole to be formed therein. To prevent a user from realizing the presence of the hole, the sole and fabric were made of a dark material.

In window 38 is located decorative rectangular fabric liner 40 having indicia, e.g. the size of the pad or shoe in which the pad is located and the brand of the

pad or shoe in which the pad is located. Decorative liner 40 is also continuous within the confines of window 38 and has a perimeter mating with and slightly smaller than that of the window.

5 The boundary of window 38, separating liners 36 and 40, has a trapezoidal cross-section, as illustrated in Figs. 3-6; the window boundary defines gap 42 between liners 36 and 40. The trapezoidal shape is provided to enable a mold, described *infra* in connection with Fig. 7,
10 to hold liners 36 and 40 *in situ* during the injection molding process for pad 10.

 Foot pad 10 of Figs. 1-4 can be used in any shoe or other footwear having about the same length as the foot pad. The foot pad provides stability and comfort to the
15 wearer of the shoe in which the foot pad is located because of the cushioning effect provided by cushion 20, ridge 32 and side wall 18, which abuts side walls of the upper of the shoe in which the foot pad is located, as well as because of the elastomeric nature of the entire
20 foot pad. Slippage of foot pad 10 relative to the shoe in which it is placed is generally prevented because treads 26 have relatively sharp edges abutting the interior face of the sole of the shoe in which pad 10 is located. During walking, when the heel of a shoe
25 initially strikes a surface being traversed, cushion 24 spreads transversely into gap 34 as does ridge 32 to provide cushioning. The teardrop shape of cushion 24 helps to correct pronation which occurs during walking because of the greater contact area toward the back of
30 the cushion than in the forward portion of the cushion.

 Cushioning in midfoot portion 14 and toe or forefoot portion 12 is enhanced because of an air gap established by treads 26 between bottom face 22 of pad 10 and upper face 43 in the midfoot and forefoot portions of the shoe
35 in which the pad is placed, as illustrated in Fig. 6. The air gap between faces 22 and 43 provided by treads

26, in combination with openings 28, causes air to flow to the foot of the wearer, to provide a cooling effect and moisture removal.

The cushioning effect of pad 10 is enhanced in shoe 44 having a specially designed sole, as illustrated in Figs. 5, 5A and 6. Shoe 44 includes conventional upper 46 to which is adhered sole 48, which can be fabricated of any conventional material; in the preferred embodiment, sole 48 is injection molded and is secured to upper 46 during a molding process. Sole 48 includes upper interior face 43 in which is located cavity 45 having a shape and position in the heel of the sole conforming generally with the shape and position of cushion 24. However, cavity 45 has an exterior boundary that is somewhat larger than the exterior boundary of cushion 24 so the cushion can freely move into and out of the cavity as the foot of the wearer traverses a surface, as illustrated in Figs. 5 and 5A. The exterior boundary of cavity 52 is below gap 34 between cushion 24 and ridge 32. Pad 10 is positioned in shoe 44 so ridge 32 sits on upper face 43 of sole 48. (Upper face 43 of sole 48 is defined by the material forming the sole or the material forming upper 46, whichever is applicable.) Cavity 45 has a height such that an air cushion subsists between the bottom face of cushion 24 and floor 47 of the cavity except during impact between the heel portion of bottom face 49 of sole 48 and the surface being traversed. At the time of impact, cushion 24 is deflected downwardly into cavity 45, and the bottom face of the cushion and floor 47 of the cavity intersect, as illustrated in Fig. 5A. This provides considerable comfort to the user of the shoe in a very inexpensive manner. After impact has occurred, cushion 24 returns to its initial position, as illustrated in Figs. 5 and 6.

Because of the elastomeric material forming pad 10 and the angle of side wall 18 relative to the plane of

the bottom of pad 10, side walls 18 of the pad conform to the side walls of shoe 44 when a foot is in shoe 44 including the pad, as illustrated in Fig. 5A, as well as in conventional shoes not including cavity 45. Adhesive is not needed to keep pad 10 in the shoe. During use, the width of pad 10 is such that the exterior of ridge 32 engages the side wall of sole 48. This causes the exterior of side wall 18 to hug the interior side wall of sole 48 and possibly upper 46 during use, to assist in providing enhanced stability and comfort to the user.

Reference is now made to Fig. 7 of the drawing, a partial cross-sectional view of a molding apparatus used to form the foot pad of Figs. 1-4. The apparatus of Fig. 7 includes top and bottom mold halves 50 and 52, as well as ring mold halves 54 and 56. In general, mold parts 50-56 are similar to those used to form injection molded soles in footwear, such as disclosed in the previously mentioned Pastor patent. Bottom mold half 52 includes conduit 58 for injecting hot thermoplastic material into mold cavity 60 by way of passage 62, located in the mold cavity between the front end of the structure which forms cushion 24 and toward the rear of midfoot portion 14.

Cavity 60 has a shape conforming with the shape of foot pad 10. To this end, the upper face of top mold half 50 includes trapezoidal shaped side walls or tabs 64 and 66. Trapezoidal tabs 64 and 66 have larger bases in the interior of cavity 60 than along the top face of mold piece 50 so that the tabs include outwardly flaring side walls 68 which assist in holding fabric liners 36 and 40 *in situ* during the molding process. Fabric liners 36 and 40 thus form the top of mold cavity 60 and the top surfaces of foot pad 10, which is formed in response to the plastic material being injected into the mold cavity. After the plastic material injected into cavity 60 has hardened, liners 36 and 40 are bonded to the plastic material to form the single integral structure of the

pad. After the plastic material has hardened sufficiently, the thus-formed product is removed from mold cavity 60. Because fabric liners 36 and 40 are held in place in mold cavity 60 by the flared walls of tabs 64 and 66 extending into the mold cavity, the need for a nail or other structure which pierces the fabric is obviated.

In the preferred embodiments, pad 10 is fabricated of thermoplastic rubber or polyvinyl chloride, both of which have an aromatic material, preferably a pine scent, added to it to provide a pleasant aroma and overcome possible obnoxious odors. Thermoplastic rubber is a preferred material because of its inherent elastomeric properties. If polyvinyl chloride is employed, a gaseous blowing agent is added to the polyvinyl chloride compound to reduce the specific gravity of the polyvinyl chloride from approximately 1.2 to approximately 1.0, to provide a bubble-like consistency to the interior of the formed product. Liquid pine oil is added to the polyvinyl chloride or thermoplastic rubber compound so that the pine oil has, by weight, approximately 1 percent of the total weight of the compound forming the foot pad. The thermoplastic rubber compound includes, in addition to the pine oil, the usual components, namely KRATON thermoplastic resin, polystyrene crystals for rigidity, lubricants, anti-oxidants, heat stabilizers, calcium carbonite filler, a plasticizer, and silica for abrasion resistance. The polyvinyl chloride composition includes polyvinyl chloride and the remaining constituents, as set forth above, in addition to the pine oil. In addition, coloring agents are added as necessary and desirable and a blowing agent is added in trace amounts to the polyvinyl chloride compound.

In one preferred embodiment, cushion 24 has a thickness of 5 mms and cavity 45 has a thickness, between bottom face 22 of the cushion and cavity face 47, of

about 2 mms under no load conditions. Toe portion 12 has a thickness of about 2 mms and each of treads has a height of about 1 mm. A curved surface between the top face of cushion 24 and side wall 18 has a radius of curvature of 1/8th inch, located at the intersection of a first line extending horizontally between the intersection of the top face of the cushion and side wall 18 and a second line extending vertically downward from the point where the curved surface begins. Such a radius of curvature assists in providing the desired flexibility for enabling side wall 18 to be pressed inwardly, from the position illustrated in Fig. 3 to the positions illustrated in Figs. 5 and 5A. Trapezoids 64 and 66 in mold 60, Fig. 7, have large and small bases that are respectively about 1.5 mms and 1.1 mms in length.

Because liners 36 and 40 are held in place in cavity 60 so the edges of the liners abut the intersections of sloping side walls 68 and the top of mold cavity 60, along bottom face 51 of mold part 50, the cost of the foot pad is reduced relative to prior art arrangements where labels or liners were adhered to foot pads. In the prior art, the label was generally put on after the foot pad was completely fabricated by a transfer process or by gluing or stitching or the like. By arranging the mold cavity so it holds the label in place cost is reduced because a step is eliminated and no separate bonding agent is required. In addition, the prior art labels sometimes did not remain properly adhered to the foot pad because of deterioration of the glue. In addition, there is a tendency for the wearer of a shoe including a label that is glued or sewn into the foot pad to feel the label. Also, in the prior art the label frequently was not consistently placed in the foot pad. The arrangement of the present invention overcomes all of these defects because liners 36 and 40 become part of the elastomeric injection molded foot pad structure at the time of

formation of the pad. Because liners 36 and 40 form the bottom of the molding cavity it is impossible for a wearer of the foot pad to feel the thickness of the fabric. By positioning liners 36 and 40 in a structure defined by the rectangle formed by trapezoidal cross-section walls 64, consistent placement of the fabric liners is assured.

Certain principles of the present invention are also applicable to formation of injection molded soles, particularly such soles as applied to slip lasted uppers, as illustrated in Fig. 8. Slip lasted upper 70, Fig. 8, includes the usual upper 72 portion, preferably formed of canvas or some other similar material, and sock liner 74 that is sewn to upper portion 72. The heel portion of sock liner 74 includes rectangular window 76. Window 76 is preferably included in the heel portion of sock liner 74 so that size and other identification indicia on a fabric layer can be easily seen through the window by a user or prospective buyer.

Sole 78 is bonded, by injection molding, to sock liner 74 and the lower segment of upper portion 72 to form the structure illustrated in the transverse and longitudinal sectional views of Figs. 9 and 10. Sole 78 is fabricated of any suitable material, such as polyvinyl chloride or thermoplastic rubber, as described *supra*, and may or may not include the pine oil scent. Sock liner 74 and fabric layer label 80, which shows through window 76, as well as the lower segment of upper 70, are bonded to sole 78 during the injection molding process so the upper face of the sole and the lower faces of the label and sock liner are bonded. Label 80 is spaced from sock liner 74 by trapezoidal cross-section gap 82, which completely surrounds the label. The bases of the trapezoidal cross-sections of gap 82 are such that the base closest to bottom face 84 of sole 78 is larger than the base of the trapezoid at the top face of the sole.

The top faces of the fabric forming label 80 and sock liner 74 are approximately co-planar, so that when a user runs its finger from label 80 to sock liner 74 no difference in height is perceived along the interior face of sole 78. The fabric of sock liner 74 hugs bottom base 86 and outer side wall 88 of gap 82.

To form the shoe partially illustrated in Figs. 9 and 10, slip lasted upper 70 is attached to a split last 90, which is partially illustrated in Figs. 11-13. Split last 90 is conventional, except that it includes tabs or walls 92, having a trapezoidal cross-section, including outwardly tapered side walls 94, as well as small upper bases 96 and enlarged lower bases 98. Tabs 92 extend into mold cavity 100, formed by lower mold half 102 and mold rings (not shown) similar to the mold rings illustrated in Fig. 7. Between tabs 92 is placed fabric label 80, such that the rectangular edges of the fabric label abut the intersection of inner side wall 94 and base 96, to be held in place. When upper 70 is initially placed on last 90, edge portions 104 of sock liner 74 extend beyond the intersection of base 98 and side wall 94, to partially cover label 80. Prior to plastic being injected into mold cavity 100 most of sock liner 74 is in intimate contact with bottom face 106 of last 90; however, segment 110 of sock liner 74 between the portion of the sock liner contacting face 106 and extending to base 98 of trapezoid wall 92 is spaced from face 106.

Preferably, thermoplastic material is injected into mold cavity 100 via conduit 112 and passages 114 and 116 in mold half 102. Passages 114 and 116 are respectively in front of and behind the rectangular region bounded by trapezoidal cross-sectioned walls 92, as illustrated in Fig. 13 to ensure that the thermoplastic material applies adequate force to sock liner 74 in front of and behind walls 92. In response to the forces applied to sock liner 74, the sock liner moves, during the injection

molding process, from the position illustrated in Figs. 11 and 12 to the position illustrated in Fig. 13, so edge portion 104 of the sock liner is approximately aligned with the intersection of side wall 94 and base 98 and portion 110 of the sock liner hugs outside surface 118 of wall 92. A smooth upper face is thus provided for the interior of the sole of the finished shoe and the smooth relationship between the upper faces of fabric label 80 and sock liner 74, described *supra*, is attained. Hence, sock liner segment 110 is translated to become side wall portion 88, Figs. 9 and 10 in the finished shoe, when sole 78 is injection molded to upper 70.

Because fabric label 80 is adhered during the injection molding process to sole 78 in a manner similar to the manner in which liner 40 is adhered to foot pad 10, many of the advantages described *supra* in connection with liners 36 and 40 are provided for fabric liner or label 80.

While there have been described and illustrated several specific embodiments of the invention, it will be clear that variations in the details of the embodiments specifically illustrated and described may be made without departing from the true spirit and scope of the invention as defined in the appended claims.

CLAIMS

1. A foot pad for a shoe comprising a single piece of elastomeric material having a heel portion and the same general shape as the bottom of the foot of a wearer, the heel portion having a cushion portion, the cushion portion being surrounded by a gap on a bottom face of the pad, the gap being surrounded by a ridge having a bottom edge that is approximately co-planar with a bottom face of the cushion, the cushion having a thickness greater than the remainder of the pad; the cushion, gap and ridge being shaped so that the cushion is compressed and expands into the gap as a heel of a user of a shoe in which the pad is positioned strikes a surface being traversed.

2. The foot pad of claim 1 wherein the pad includes a side wall extending around the heel portion and along an instep portion to define an arch support.

3. The foot pad of claim 1 wherein the side wall extends from a substantially planar face defining the bottom of the heel portion at an angle greater than the angle between the side wall of an upper and the sole of the shoe so the side wall of the pad must be bent to fit within the shoe and abuts side wall portions of the shoe.

4. The foot pad of claim 1 wherein the pad further includes a toe portion with multiple bottom treads spacing a bottom face of the toe portion from an interior upper face of a sole of the shoe in which the pad is located, the treads being positioned, arranged and shaped to minimize slippage between the pad and the interior face of the sole.

5. The foot pad of claim 4 wherein the toe portion includes openings between bottom and top faces thereof to provide air flow passages between (a) a gap between bottom and top faces of the pad and the interior face of the sole and (b) a region above the top face of the pad.

6. The foot pad of claim 1 wherein the pad is injection molded, a fabric layer molded with the upper surface of the pad, the fabric layer being surrounded by a groove in the upper face of the pad formed during injection molding of the pad by a molding cavity having an interior wall for keeping the fabric layer *in situ* during molding.

7. The foot pad of claim 6 wherein the groove is surrounded by another fabric layer having a window in which the fabric layer is surrounded by the groove.

8. The foot pad of claim 6 wherein the elastomeric material includes a liquid aromatic agent included in the injected material forming the pad.

9. The foot pad of claim 1 wherein the elastomeric material includes a liquid aromatic agent.

10. The foot pad of claim 9 wherein the liquid aromatic agent is pine oil.

11. A sole portion for a shoe comprising an injection molded elastomeric structure having the same general shape as the bottom of a foot of a wearer, a fabric layer molded with an upper surface of the structure, the fabric layer being surrounded by a groove in the upper face formed during injection molding of the sole portion by a molding cavity having an interior wall for keeping the fabric layer *in situ* during molding.

12. The sole portion of claim 11 wherein the fabric layer is continuous and does not include an opening.

13. The sole portion of claim 11 wherein the groove is surrounded by a fabric coating having a window in which the fabric layer is surrounded by the groove.

14. The sole portion of claim 11 wherein the fabric coating is continuous and does not include an opening except where the window is located.

15. The sole portion of claim 11 wherein the sole portion comprises the sole of a shoe having a fabric sock liner bonded by molding with the upper surface of the structure, the sock liner having a window defined by the groove.

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16. The sole portion of claim 15 wherein the groove has a side wall to which the sock liner is bonded by molding.

17. The sole portion of claim 16 wherein the side wall flares away from the window.

18. The sole portion of claim 15 wherein the groove has a side wall and base removed from the upper surface to which the sock liner is bonded by molding.

19. A foot pad for a shoe comprising a single piece of elastomeric material having a heel portion and the same general shape as the bottom of the foot of a wearer, a toe portion with multiple bottom treads spacing a bottom face of the toe portion from an interior upper face of a sole of the shoe in which the pad is located, the treads being positioned, arranged and shaped to

5

10 minimize slippage between the pad and the interior face
of the sole, the toe portion including openings between
bottom and top faces thereof to provide air flow passages
between (a) a gap between bottom and top faces of the pad
and the interior face of the sole and (b) a region above
the top face of the pad.

5 20. A shoe comprising an upper, a sole having an
interior upper surface, an elastomeric insole having
bottom and outer surfaces mating with the interior upper
surface of the sole and interior side wall surfaces of
the upper, the insole having a downwardly depending heel
cushion fitting into a cavity in the sole interior upper
surface, the cushion having a bottom surface spaced from
a floor and side walls of the cavity while no load is
10 applied to a bottom heel portion of the sole, the cushion
expanding outwardly toward the cavity side walls and the
spacing between the cushion bottom surface and the cavity
floor decreasing as the bottom of the heel portion of the
shoe strikes a surface to be traversed.

5 21. A shoe comprising an upper, a sock liner having
a window having edges defining an opening in the sock
liner, a molded sole having an upper interior surface
molded with the sock liner, the upper interior surface
being molded with a fabric layer dimensioned and
positioned to extend almost to the edges of the window
and to be seen through the window.

5 22. The shoe of claim 21 wherein the fabric layer
is surrounded by a groove in the upper face formed during
injection molding of the sole portion by a molding cavity
having an interior wall for keeping the fabric layer *in*
situ during molding.

23. A sole portion for a shoe comprising an injection molded elastomeric structure having the same general shape as the bottom of a foot of a wearer, a fabric layer molded with an upper surface of the structure, the fabric layer having an edge surrounded by a groove in the upper face formed during injection molding of the sole portion by a molding cavity having an interior wall for keeping the fabric layer *in situ* during molding.

24. The sole portion of claim 23 wherein the edge is at the exterior of the fabric.

25. The sole portion of claim 23 wherein the edge is along an interior edge of a window in the fabric.

26. A method of making a foot pad or a sole of a shoe comprising inserting a fabric layer in a portion of a mold part which defines a part of a mold cavity, the mold cavity part having walls extending into the mold cavity, the mold cavity walls being shaped to hold the fabric layer *in situ*, then forming the mold cavity, and injecting plastic material into the formed mold cavity so the fabric layer is seated against a face of the mold part by the material and the material flows against the walls, then opening the mold after the material is no longer in a plastic state.

27. The method of claim 26 wherein the walls are tapered toward the mold part face from a portion of the mold cavity superposed with the fabric layer.

28. The method of claim 27 wherein the walls completely surround the fabric layer.

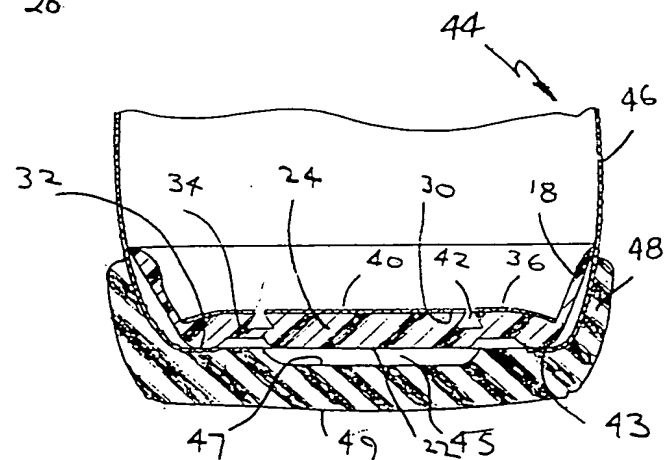
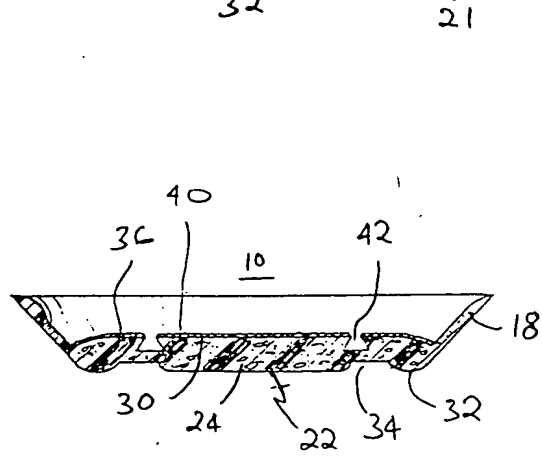
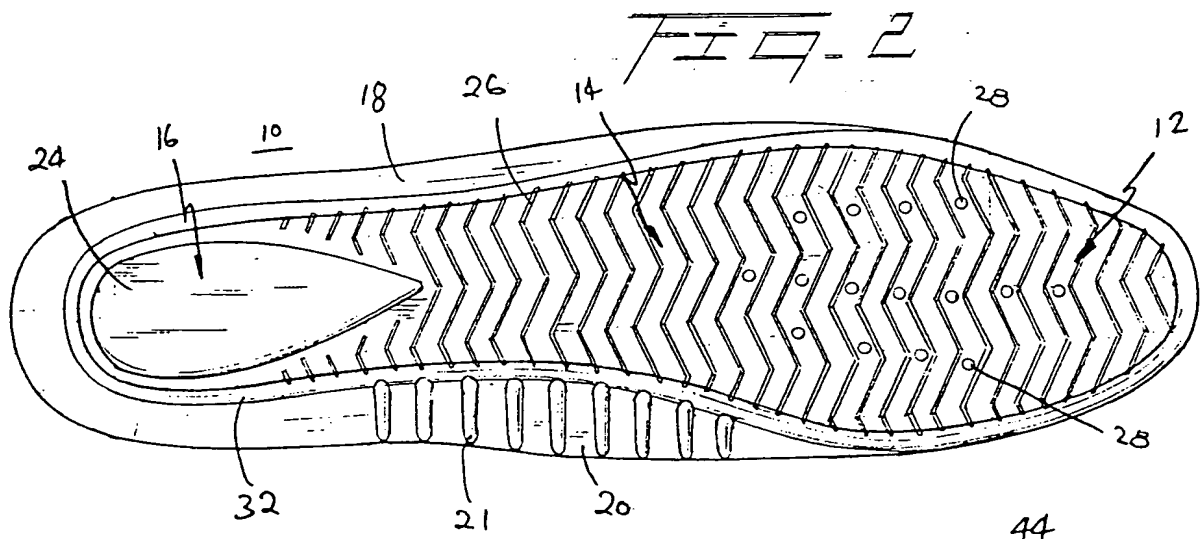
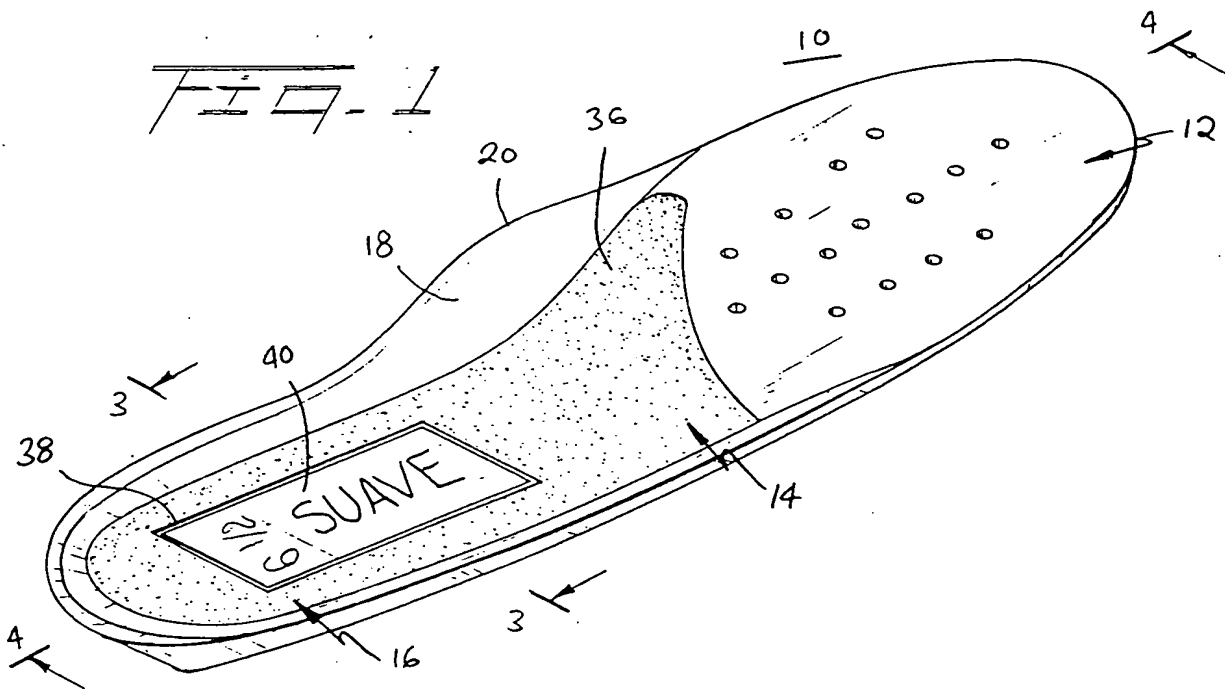
29. The method of claim 26 wherein the method is used to make a shoe having an upper to which a sock liner is secured, the walls defining an encircled region in which the layer is placed, placing the upper with the sock liner secured thereto on the mold part, the sock liner having a window having a perimeter surrounding the encircled region when the upper is initially placed on the mold part, a segment of the sock liner extending from a portion of the mold part face outside of the walls to a top surface of the walls and being spaced from a segment of the mold part face and outer surfaces of the walls when the upper is initially placed on the mold part, the plastic material being injected into the mold cavity with sufficient force to push the sock liner segment against the segment of the mold part face and the outer surfaces of the walls.

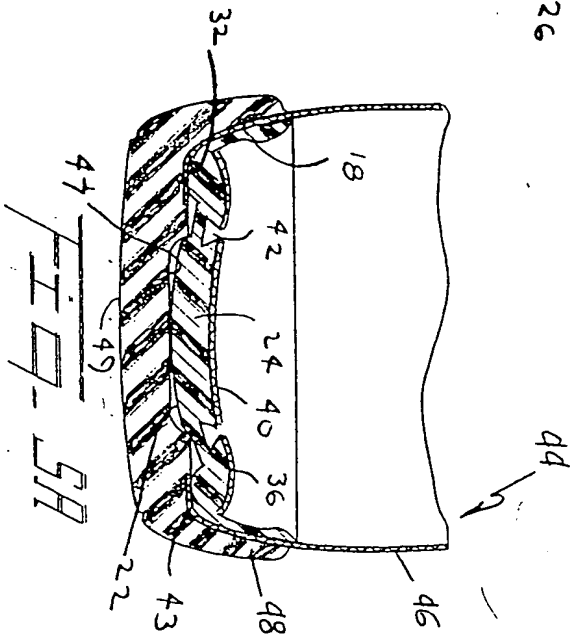
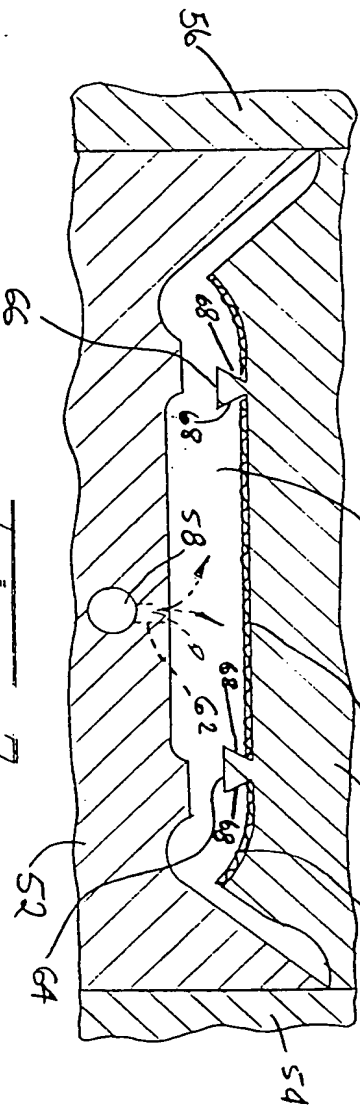
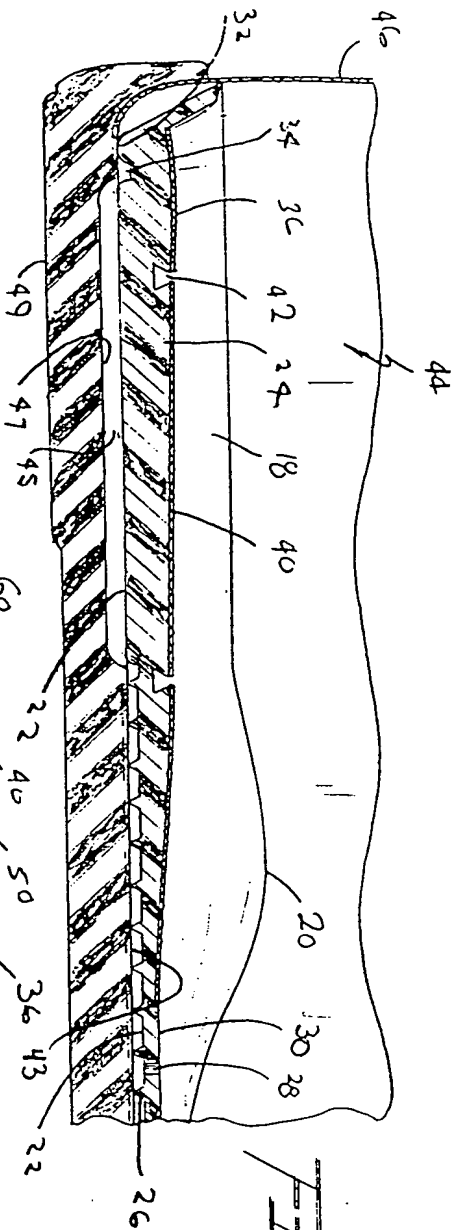
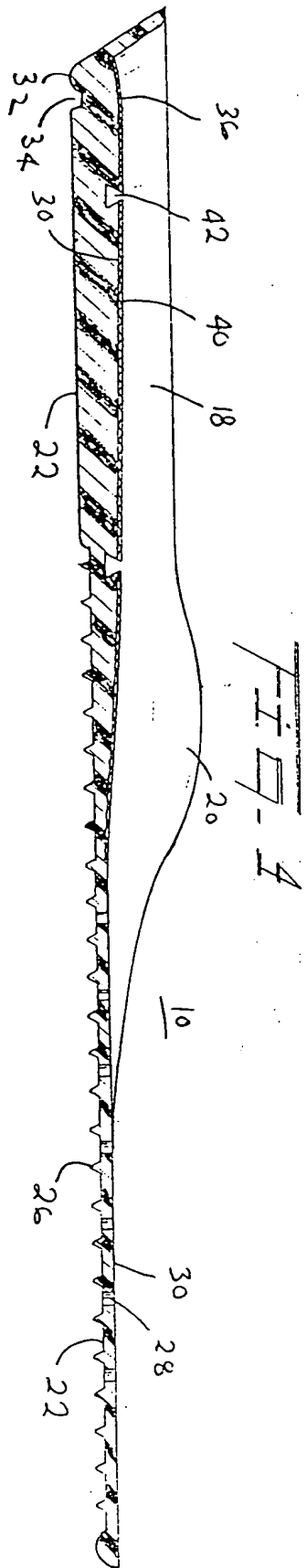
30. The method of claim 29 wherein the plastic material is injected into the cavity in front of and behind the walls.

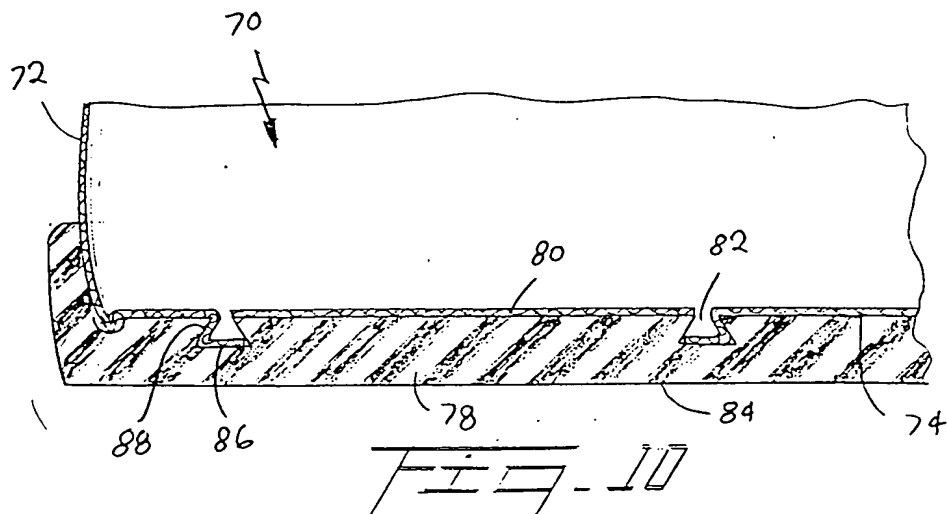
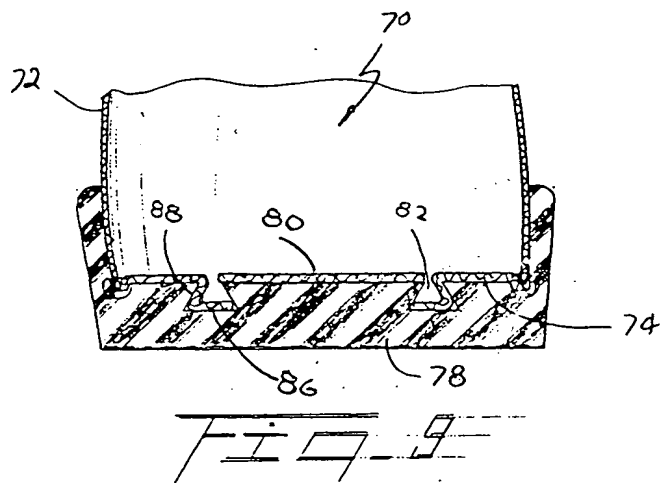
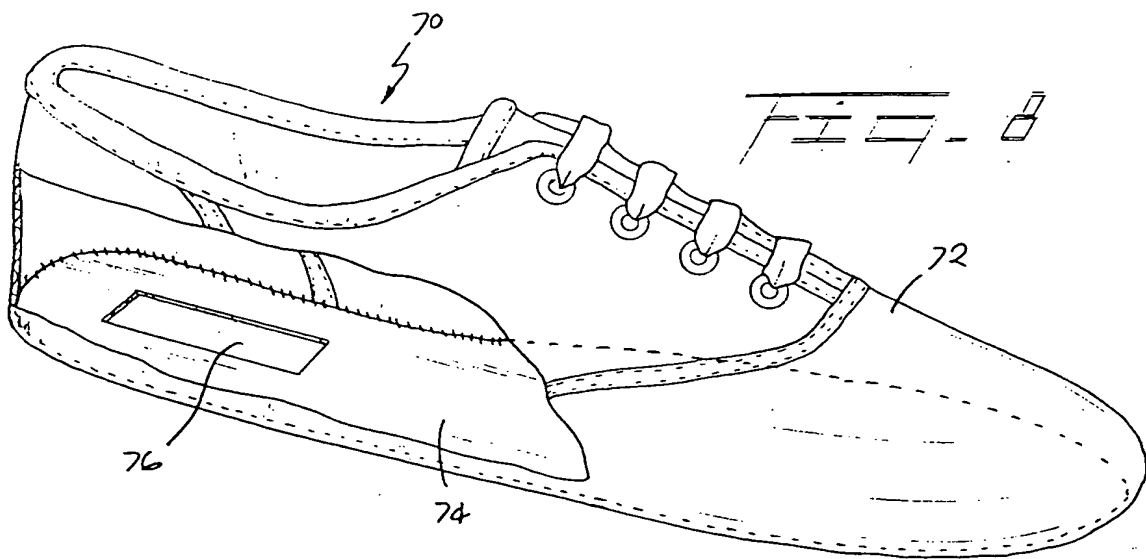
Abstract of the Disclosure

An elastomeric injection molded foot pad having a pine oil scent has a cushioned heel surrounded by a gap on the pad bottom. The gap is surrounded by a ridge having a bottom edge that is approximately co-planar with a bottom face of the cushion. Bottom treads spacing a bottom face of the pad from an interior face of a shoe sole minimize slippage between the pad and the sole. Openings in the pad provide air passages from a gap below the pad face to a foot of a wearer of a shoe including the pad. A fabric layer molded with the pad upper surface is surrounded by a groove in the upper face formed during molding by a cavity having an interior wall for keeping the fabric layer *in situ*. The groove is surrounded by a fabric coating having a window where the fabric layer is located. A similar fabric layer is molded with an injection molded sole bonded to a sock liner of a slip lasted shoe; the liner has a window surrounding the fabric layer.

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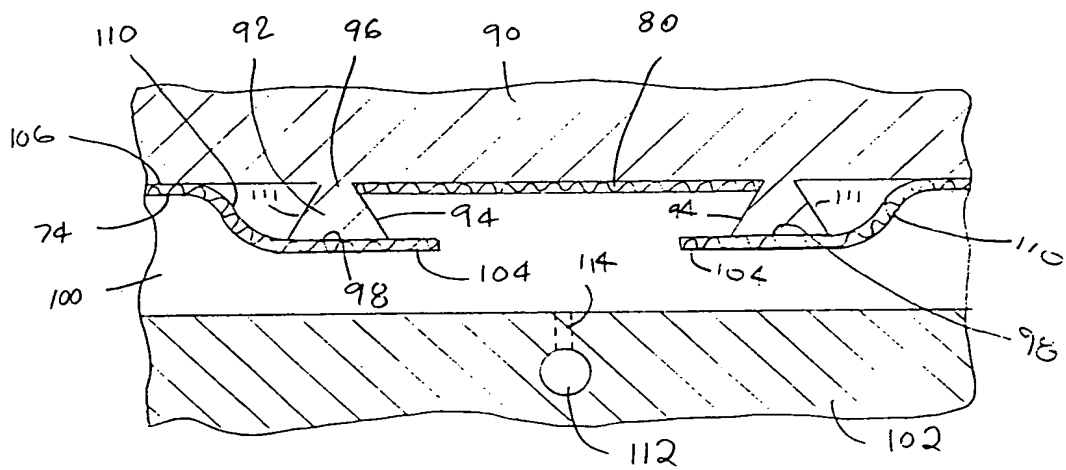


Fig. 11

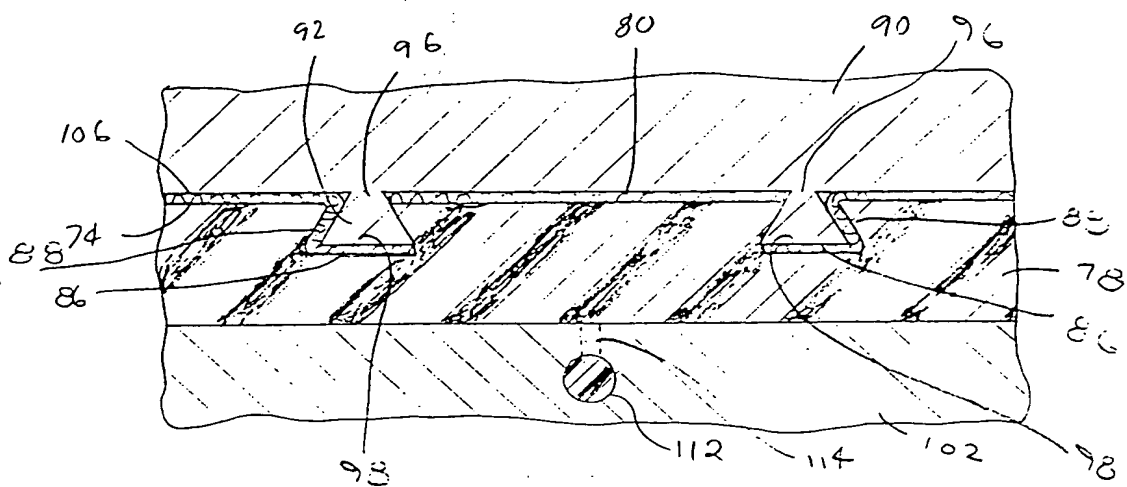


Fig. 13

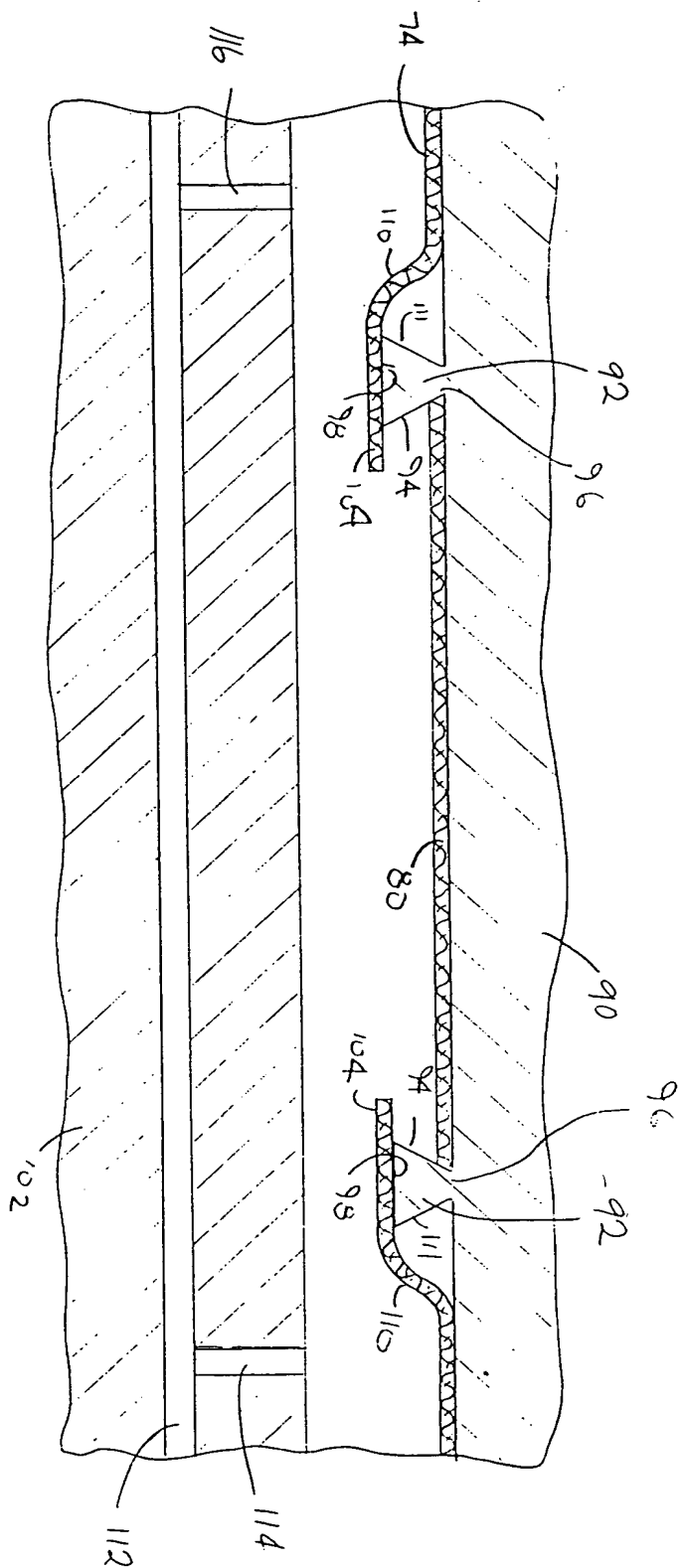


FIG. 12

中華民國專利公報資料庫 - 專利公報全文

本資料僅供參考，所有資訊以經濟部智慧財產局專利公報為準。

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專利名稱: 射出成形之彈性鞋底元件，含有該鞋底之鞋及製造該鞋底之方法

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申請專利範圍:

- 1.一種具有一單一塊彈性材料之鞋的足墊，該足墊具有一跟部與一穿著者之足底形狀大致相同的形狀，該跟部具有一緩衝部，該緩衝部係被一在該墊底面上之間隙所環繞，該間隙係被一具有大約與該緩衝部之底面同一平面之底邊緣的脊所環繞，該緩衝部之厚度比該墊之剩餘部份來得厚；該緩衝部，間隙與脊係被製成可使該緩衝部在一使用其中固設有該墊之鞋者的跟部撞擊一欲橫越之表面時被壓入且膨脹進入該間隙。
- 2.如申請專利範圍第1項所述之足墊，其中該墊具有一延伸在該跟部四週並且沿著一鞋背部份以界定出一拱形支持物的側壁。
- 3.如申請專利範圍第1項所述之足墊，其中該側壁由一界定該跟部之底部之大致平坦之面以一大於在一鞋面之側壁與該鞋之鞋底間之角度的角度延伸，因而該墊之側壁必須彎曲以便嵌入該鞋內並且靠抵該鞋之側壁部份。
- 4.如申請專利範圍第1項所述之足墊，其中該墊還包括一趾部，該趾部具有多數將該趾部之底面與其中置有該墊之鞋之鞋底之上表面分開的胎紋，該等胎紋係被固定，配置且製成可將在該墊與該鞋底內面之滑動減到最小的形狀。
- 5.如申請專利範圍第4項所述之足墊，其中該趾部具有在其底與頂面之間的開口以便讓空氣通過在(a)一介於該墊之底與頂面以及該鞋底之內面間の間隙以及(b)一在該墊之頂面上方的區域之間。
- 6.如申請專利範圍第1項所述之足墊，其中該墊是射出成型的，一織物層與該墊之上表面模製在一起，該織物層係被一在該墊之上表面中的槽所環繞，該槽係在以一具有一用以在模製時將該織物層保持定位之內壁的模穴將該墊射出成型時形成。
- 7.如申請專利範圍第6項所述之足墊，其中該槽係被具有一窗之另一層織物所環繞，在該窗中該織物層係被該槽所環繞。
- 8.如申請專利範圍第6項所述之足墊，其中該彈性材料包括一液態芳香劑，該芳香劑係包含在形成該墊之射出材料中。
- 9.如申請專利範圍第6項所述之足墊，其中該彈性材料包括一液態芳香劑。
- 10.如申請專利範圍第9項所述之足墊，其中該液態芳香劑是松樹油。
- 11.一種具有一射出成型彈性結構之鞋的鞋底部份，該彈性結構具有與一穿著者足之底部形狀相同之形狀，一織物層與該結構之上表面模製在一起，該織物層係被在該上表面中之槽所環繞，該槽係在以一具有一用以在模製時將該織物層保持在定位之內壁的模穴將該鞋底部份射出成型時形成。
- 12.如申請專利範圍第11項所述之鞋底部份，其中該織物層係連續的而且沒有開口。
- 13.如申請專利範圍第11項所述之鞋底部份，其中該槽係被一具有一窗之織物塗層所環繞，在該窗中該織物層被該槽環繞。
- 14.如申請專利範圍第11項所述之鞋底部份，其中該織物塗層係連續的而且除了該窗所在處之外沒有開口。
- 15.如申請專利範圍第11項所述之鞋底部份，其中該鞋底部份包括具有利用與該結構之上表面模製而結合之織物襯墊的鞋的鞋底，該襯墊具有一由該槽界定之窗。
- 16.如申請專利範圍第15項所述之鞋底部份，其中該槽具有一與該襯墊以模製法結合的側壁。
- 17.如申請專利範圍第16項所述之鞋底部份，其中該側壁由該窗向外展開。
- 18.如申請專利範圍第15項所述之鞋底部份，其中該槽具有一由該上表面取下之側壁與基底，該襯墊與該側壁及基底以模製法結合。

19.一種鞋之足墊，包括一單一塊具有跟部以及與一穿著者之足底形狀相同的彈性材料，一趾部，該趾部具有將該趾部之底面與其中置有該墊之鞋之鞋底內上表面分開的多數胎紋，該等胎紋係被定位，配置並製成可使在該墊與該鞋底之內表面間的滑動減到最小的形狀，該趾部具有在其底與頂面之間的多數開口以便讓空氣流經在(a)一介於該墊之底與頂面以及該鞋底之內表面之間間隙以及(b)一在該墊之頂面上方之區域之間。

20.一種鞋，包括一鞋面，一具有一內上表面之鞋底，一具有與該鞋底之內上表面以及該鞋面之側壁表面相配合之底與外表面的彈性中底，該中底具有一嵌入一在鞋底內上表面中之凹洞的下垂跟緩衝部，該緩衝部具有一當該鞋底之底跟部上未施加負載時與該凹洞之底與側壁分開的底表面，該緩衝部向外朝著該凹洞側壁膨脹而且在緩衝部底表面與該凹洞底之間的空間當該鞋之跟部底面撞擊一欲橫越之表面時減少。

21.一種鞋，包括一鞋面，一具有一窗之襯墊，該窗具有在該襯墊中界定出一開口的邊緣，一具有與該襯墊模製在一起之上方內表面的模製鞋底，該上方內表面係與一大小與位置製成幾乎延伸到該窗之邊緣以便看穿該窗的織物層。

22.如申請專利範圍第21項所述之鞋，其中該織物層係被一在該上表面中之槽所環繞，該槽係在以一具有一用以在模製時將該織物層保持定位之內壁的模穴將該鞋底射出成型時形成。

23.一種鞋之鞋底部份，包括一具有與一穿著者之足之底面形狀相同之形狀的射出成型彈性結構，一與該結構之上表面模製在一起的織物層，該織物層具有一被一在該上表面中之槽所環繞的邊緣，該槽係在以一具有一用以在模製時使該織物層保持定位之內壁的模穴將該鞋底部份射出成型時形成。

24.如申請專利範圍第23項所述之鞋底部份，其中該邊緣是在該織物之外部。

25.如申請專利範圍第23項所述之鞋底部份，其中該邊緣是沿著在該織物中一窗之內緣。

26.一種製造一足墊或一鞋之鞋底的方法包括在一界定一模穴之一部份之模零件之一部份中插入一織物層，該模零件具有伸入該模穴中之壁，該模穴壁之形狀可將該織物層保持定位，然後形成該模穴，以及將塑膠材料射入所形成之模穴中，因此該織物層被該材料頂靠在該模零件的面上而且該材料流抵於該壁上，然後在該材料不再是塑膠狀態後打開該模。

27.如申請專利範圍第26項所述之方法，其中該壁係由疊置有該織物層之模穴之一部份向該模零件面成錐狀。

28.如申請專利範圍第27項所述之方法，其中該壁完全環繞該織物層。

29.如申請專利範圍第26項所述之方法，其中該方法係用來製造一具有一襯墊與其連接之鞋面的鞋，界定有該層置於其中之包圍區域的壁，將與該襯墊連接之鞋面放在該模零件上，該襯墊具有一窗，該窗有一當該鞋面起先被放在該模零件上時環繞該包圍區域的周邊，一該襯墊之區域由在該壁外側該模零件之一部份延伸到一該壁之頂表面而且當該鞋面起先被放在模零件上時與該模零件面之區段以及該壁之外表面互相分開，該塑膠材料係以一足夠之力量射入該模穴中以便使該襯墊區段推頂該模零件面之區段與該壁之外表面。

30.如申請專利範圍第29項所述之方法，其中該塑膠材料係在該壁前方與後方射入該模穴中。

第1圖是本發明一較佳實施例之足墊的立體圖；

第2圖是第1圖中所示之足墊的底視圖；

第3圖是沿第1圖之直線3-3所做之橫截面圖；

第4圖是沿第1圖之直線4-4所做的縱截面圖；

第5圖是第1-3圖中所示之足墊以及一特別設計來容納該足墊之鞋的一部份的橫截面圖；

第5A圖是當一足在該鞋中而且該鞋之跟部撞擊一欲越過之表面時在第5圖中所示的結構的視圖；

第6圖是在第5圖中部份地所示之鞋中第1-3圖所示之足墊的部份側截面圖；

第7圖是一用以製造在第1-4圖中所示之足墊的一穴模製裝置的部份橫截面圖；

第8圖是本發明一第二實施例一適於讓一鞋底部份附著其上的帆布鞋面的立體圖，其中部份為虛線；

第9圖是在第8圖中所示一具有一鞋面之以加州法製成之鞋以及本發明第二實施例之一鞋底元件的部份橫截面圖；

第10圖是在第9圖中所示之鞋的部份縱向截面圖；

第11圖是一用以在模製材料被射入一模穴中之前，形成在第9與10圖中所示之鞋的模製裝置的部份橫向截面圖；

第12圖是在將一塑膠模製材料射入該模穴中之前，在第11圖中所示之模製裝置的部份縱向截面圖；以及

第13圖是在該塑膠材料已經被射入該模穴中之後，在第11圖中所示之結構的部份橫向截面圖。

專利相關圖形檔：[附圖 1] [附圖 2] [附圖 3] [附圖 4] [附圖 5]

專利相關公告：資料庫中無相關雜文..

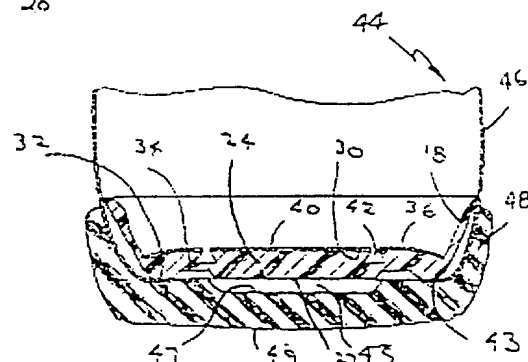
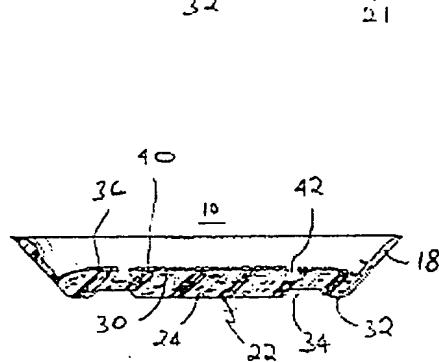
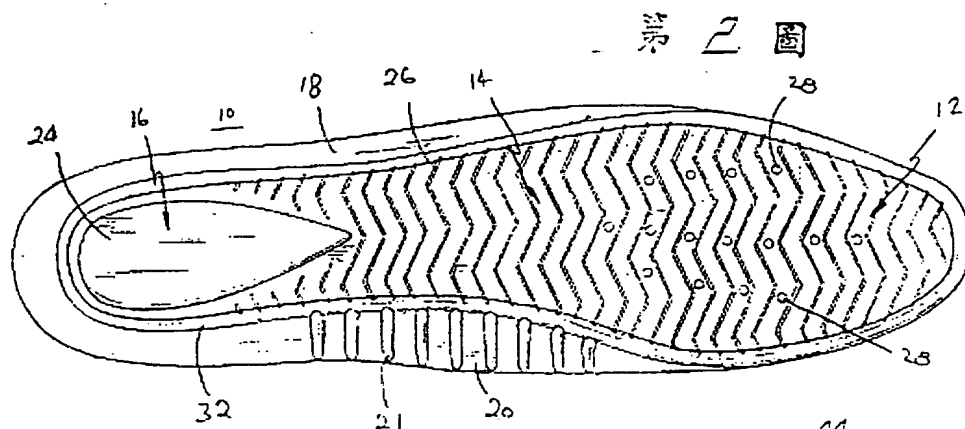
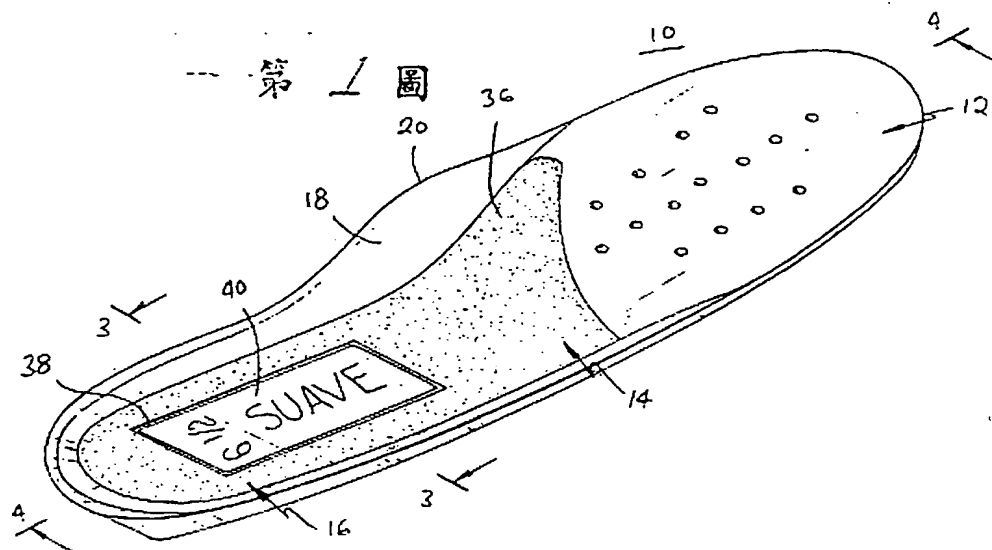
中華民國專利公報資料庫 - 專利相關圖形檔

本資料僅供參考，所有資訊以經濟部智慧財產局專利公報為準。

資料來源：智慧財產局

專案執行：APIPA

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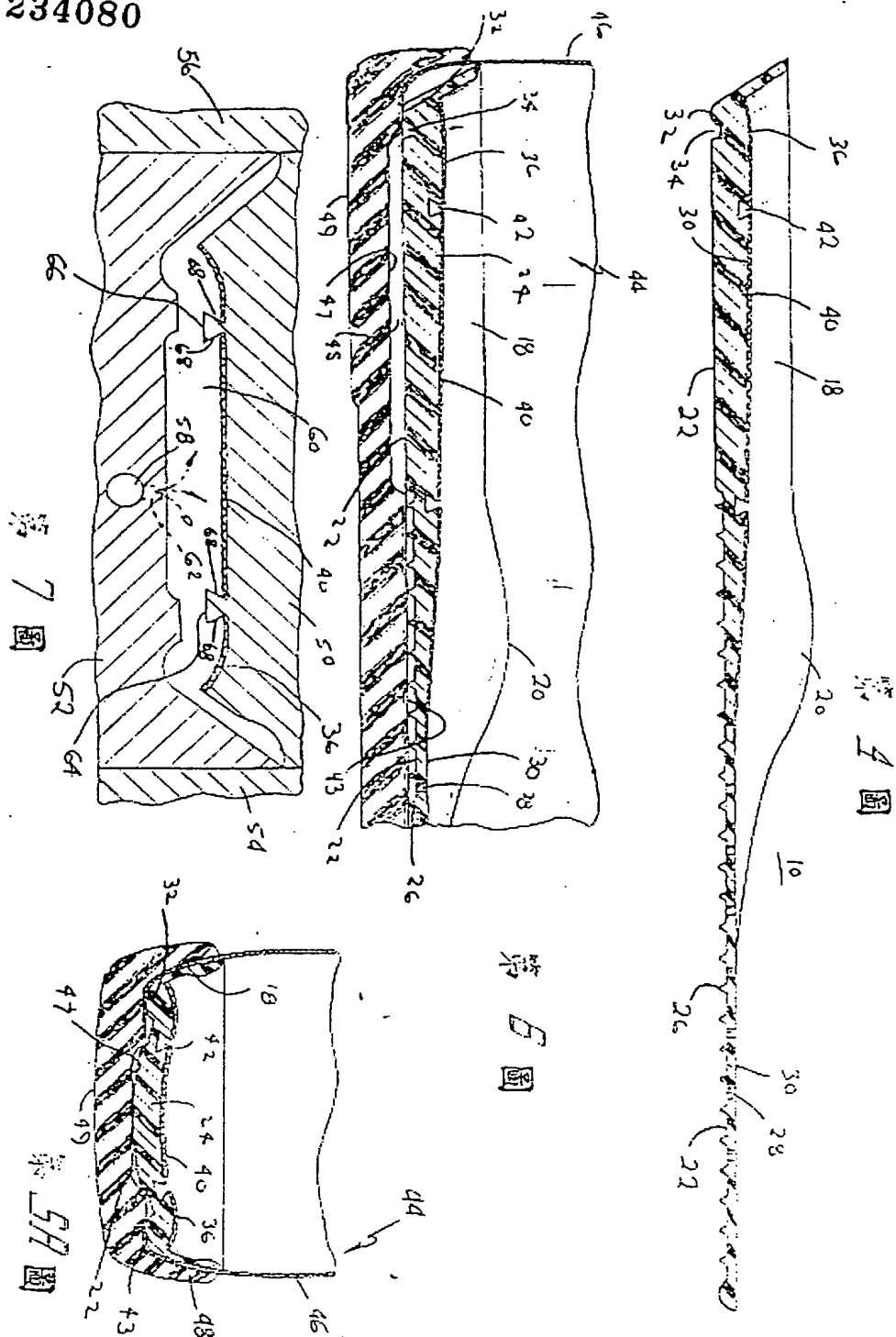
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專案執行：APIPA

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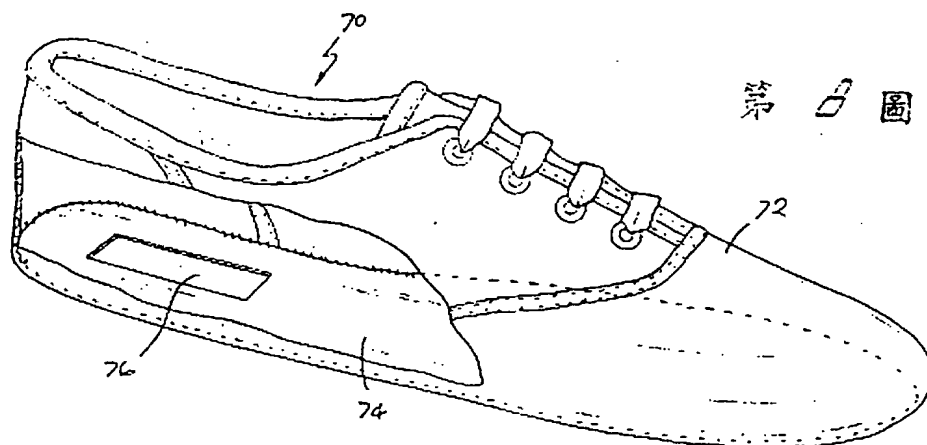
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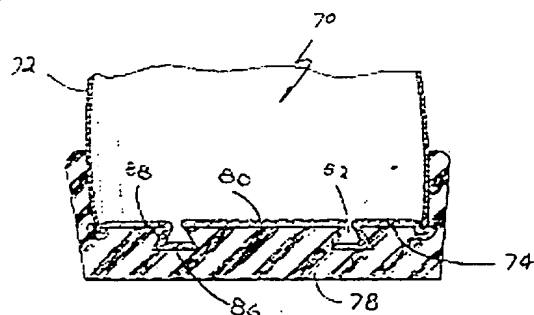
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專案執行：A P I P A

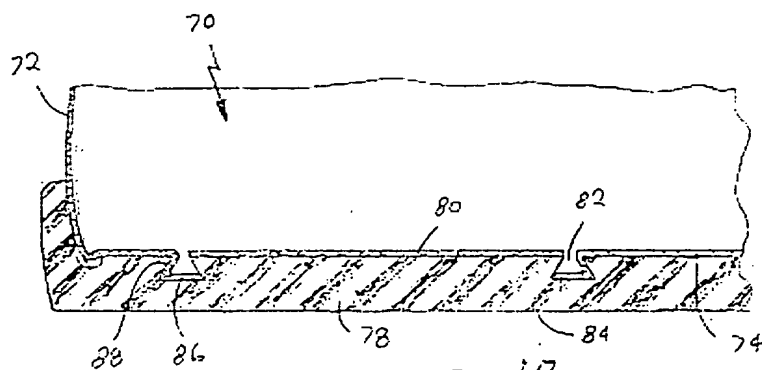
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第 8 圖



第 9 圖



第 10 圖

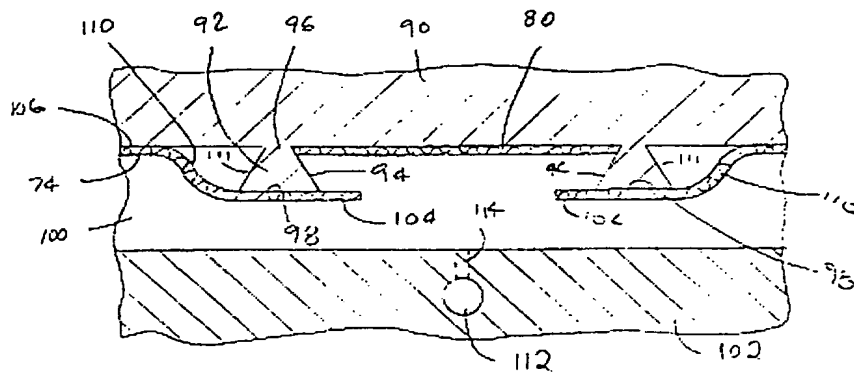
中華民國專利公報資料庫 - 專利相關圖形檔

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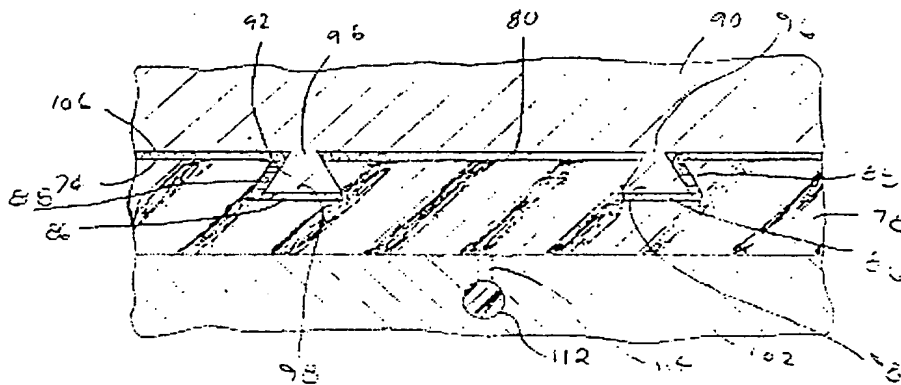
資料來源：智慧財產局

專案執行：APIPA

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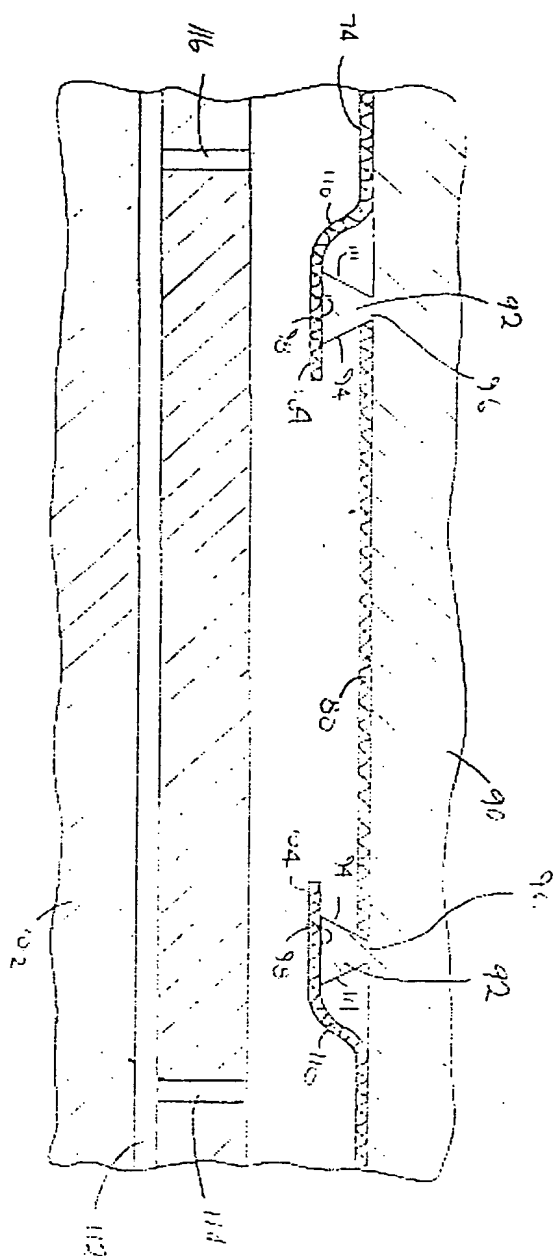
第 11 圖



第 12 圖

本資料僅供參考，所有資訊以經濟部智慧財產局專利公報為準。 ###
資料來源：智慧財產局 專案執行：A P I P A

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